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Welding Is Aid To Progress in Auto Body Fabrication

Improved Welding Methods Have Facilitated the Use of Lighter Gage Sheets, Increased Production, Simplified Operations and Reduced Costs

By Joseph W. Meadowcroft

Assistant Works Manager, Edward G. Budd Mfg. Co.

INCREASE in the use lighter gage sheet metals during the past 20 years has been due in a large part to the progress which has been made in the development and application of the different methods of welding. It has been proven conclusively that any of the methods of welding, including arc, spot, gas or flash, when adopted as standard operations will produce results which are satisfactory and reliable and at a low cost. With welding as the basis of assembly, it is important that careful consideration be given to the adaptibility of the particular type of welding which should be used and to certain other conditions which greatly influence this phase of the work.

The rate and duration of production should, perhaps, demand the greatest consideration. Successful high production demands simplicity of

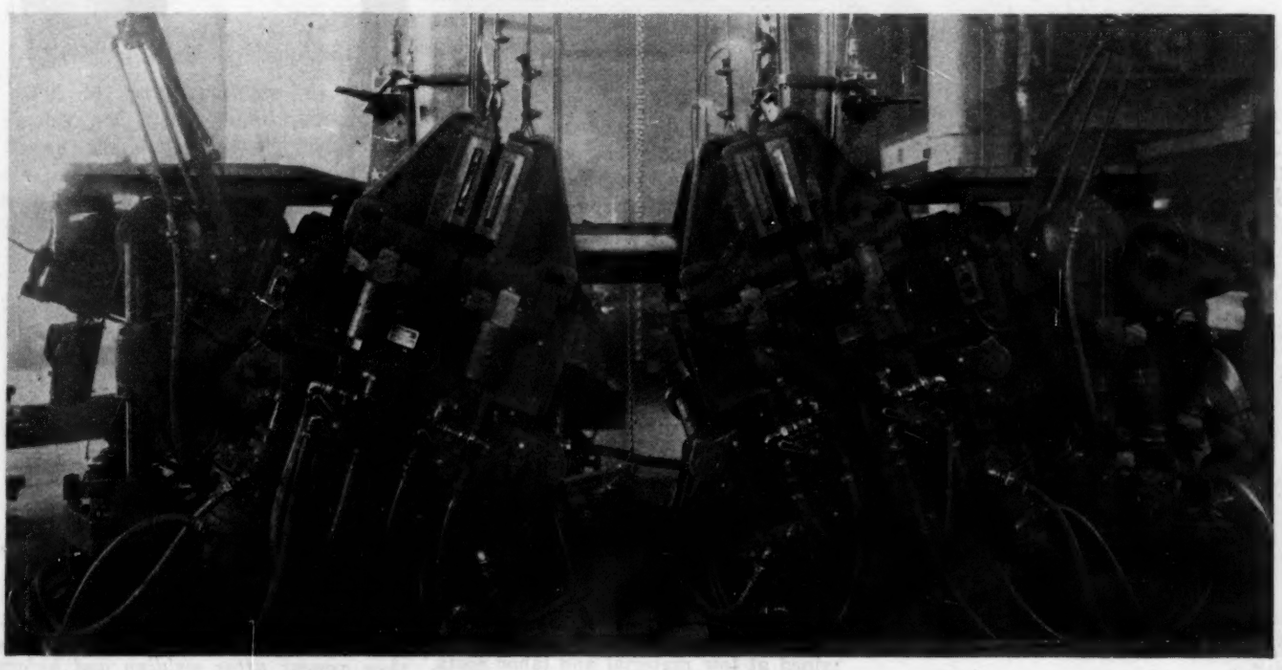

Fig. 1—Front view of flash welding machine, with automobile tonneau back and side panels in position for welding

Fig. 2 (Left)—Entire outer side panel formed from one large sheet of metal. Fig. 3 (Below)—Fabricated body as it appears after welding is completed

operation and low cost. From this it follows that the welding operations should not be encumbered by requiring highly skilled labor nor by complicated and unwieldy machines which inevitably would tend to lower the efficiency of manufacture.

Of equal importance is the necessity of having parts designed so that the welding and assembly operations may be carried out properly. The design should be simple and readily adaptable to one of the standard methods of welding. One of the great mistakes often made is to attempt to weld an article which originally was designed for riveting without first considering whether or not advantageous changes might be made.

Materials Selection Important

Proper selection of materials to be used is also of great importance and care should be exercised to bring about the desired results. If a definite property such as, for example, strength or flexibility is the ultimate purpose, emphasis should be laid on the materials as well as the correct design in order to obtain the particular object in view.

All-Steel Bodies Are Completely Welded

EARLY in the manufacture of automobile bodies it was learned that welding offered a most economical means of fabrication. In designing bodies, therefore, every effort was made to utilize the gas and electric welding methods to as great an extent as possible. As a result of this objective, designers finally developed an all-steel, all-welded body, and in this article some features of the construction are pointed out. The article is taken from a paper presented at the World Engineering congress in Tokyo, Japan, in October by Joseph W. Meadowcroft, assistant works manager, Edward G. Budd Mfg. Co., Philadelphia.

Some 20 years ago when the company with which the author is associated was formed to manufacture automobile bodies, it was faced with the problem of determining what methods of fabrication and assembly would produce the best results. With the conception of the all-steel automobile body, the Edward G. Budd Mfg. Co., Philadelphia, as a pioneer in this field, has been constantly developing and improving methods of manufacture and increasing knowledge of welding until it has reached the present high standard of excellence. At the same time this company has been able to effect an increase in the efficiency of operations by a considerable reduction in the costs of tools and welding equipment.

In the author's opinion, spot and flash welding are the two types of welding that are most readily adaptable to the successful production of automobile bodies. These methods produce good, strong and reliable welds. They yield clean results and high rates of production may be maintained at low material and labor costs. In certain cases, however, some of the other types of welds are considered more efficacious. In the bodies which the company now manufactures, all of the usual methods of welding are used except the thermit weld, which is not adaptable to sheet metal work.

Spot Welding Used First

In the early history of the company, production was devoted completely to the production of the open-type body or touring car. At this early date much stress was laid on a proper design for the use of the spot weld, the flanges and overlapping edges of metal having been of sufficient length and width to provide the greatest strength possible after spot welding. The amount of welding required in the production of this type of body consisted of 1000 to 1100 electric spot welds; 70 to 80 inches of oxy-acetylene welding and 10 to 12 inches of metallic arc welding.

After many years of experimenting the first closed body of all steel was produced. The entire design is developed so as to allow easy access

Figs. 4 and 5 (Right)—Two principal units of an automobile body as they appear after welding and before assembly

of the copper spot welding tool. Although the tools are of many different designs the clearance allowed by the design of the section is such that the tool has sufficient strength and at the same time permits the operator to make welds of maximum strength and clean appearance.

From this point a further improvement in design was made with the idea of using welding as the sole means of assembling. Many difficult problems arose which appeared to be unsurpassable from a welding standpoint.

This closed body was termed the "full-vision body" on account of the small and compact sections which afforded much greater vision from all angles by the occupant of the car. The posts of this construction have four times the strength of wooden pillars.

The new type of construction represents an interesting development in automobile body building. It represents an achievement not only in the art of forming large stampings, but also in strength and roominess. Fig. 3 gives an idea of the outside appearance of the new structure while Figs. 4 and 5 show the two principal units before final assembly.

Fig. 2 represents the side panel construction and shows the entire outer side panel formed from one large sheet of metal, which is reinforced by an inner panel which also is produced from one large sheet. The same general principle of construction is followed on all other unit parts including the cowl and doors. The edges of the inner panel and outer panels are spot welded and clinched.

Construction Is Simplified

Fig. 6 represents the detail assembly of two pillar posts and shows the inner panels located in the outer panel, the location of the spot welds and interlocking clinched flanges. In this type construction the major parts have been reduced from 300 to 17. It is clear that such a reduction in parts further obviates any tendency to develop squeaks and rattles and results in a body which is much stronger and much more rigid.

To complete each job, this type of construction requires 125 spot welds, 42 inches of gas welding, 4 inches of metallic arc welding and 216 inches of electric flash welding.

Due to the large size of this new type of stamping, the problem of handling during the welding and assembly operations had to be solved. But the flexibility of the welding machines is such that it lends itself readily to the changes which had to be made. Overhead conveyor equipment was designed and constructed so that the stampings can be brought easily into position at the working head of the machine.

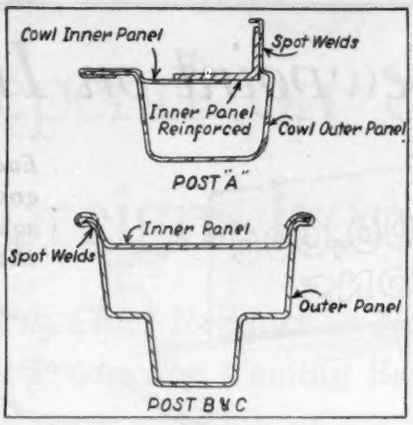

Fig. 6—Detail pillar post construction. Major parts in this type of construction have been reduced from 300 *to* 17

Fig. 7 shows the standard spot welding machine. This type of machine can be operated either by hand, foot or power according to the exigencies of the particular operation.

In the assembly of the four major units, the right and left-hand units are placed in a large flash welding machine. Fig. 1 shows the flash welding machine, front view, with tonneau back and side panels in position for welding. In this machine, the side and rear panels are flash welded into a unit. The piece is then placed in another jig, the roof opening being correctly aligned, and the cowl attached, first by means of rivets and later spot welded. The product after leaving the assembly jig is ready for the doors and final finish. Both of these operations are produced on line conveyors.

Steel Body All Welded

Two types of automobile bodies are in use today. One type is known as the composite body and the other is the all-steel body. The composite body, consists of a framework of wood; hundreds of wooden parts, glued and screwed together, and covered with a shell of light sheet

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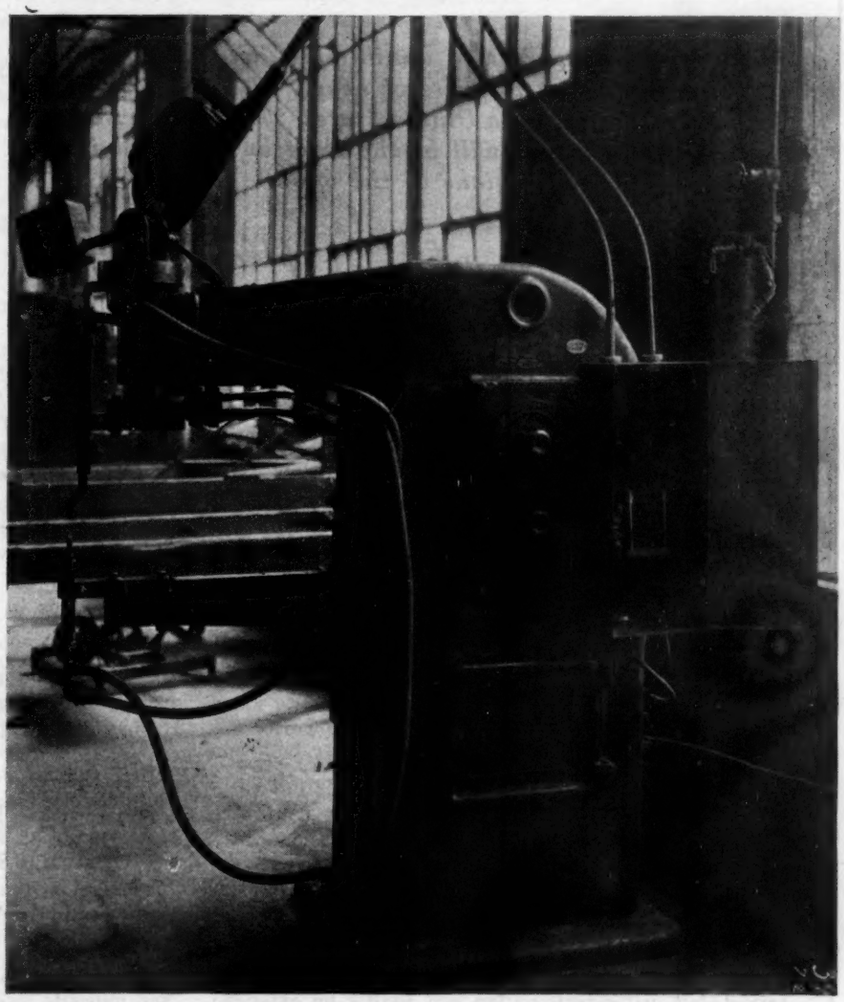
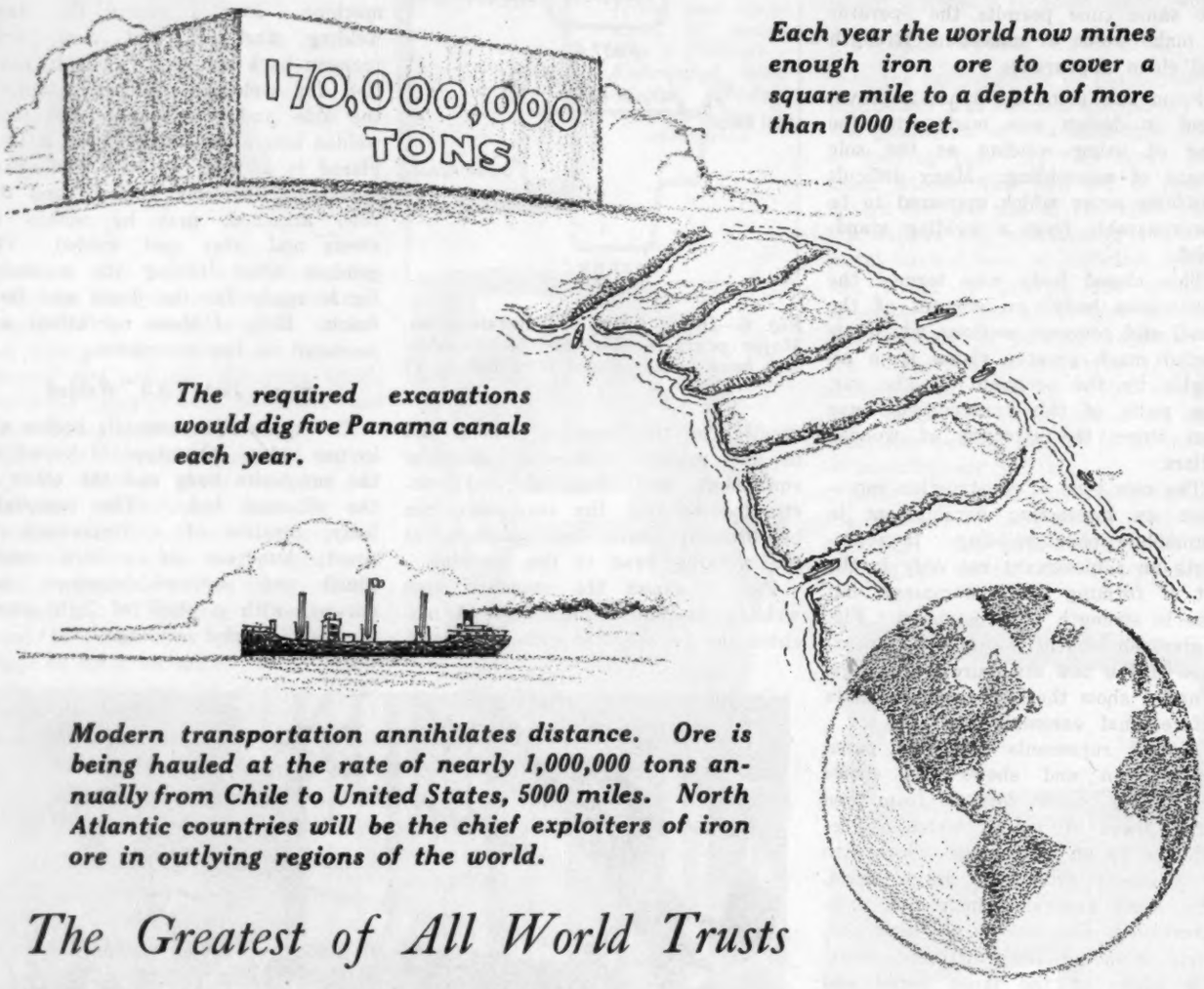


Fig. 7—Standard spot welding machine which can be operated by either hand, foot or power, according to the requirements of production

A World Viewpoint on Iron Ore~



Each year the world now mines enough iron ore to cover a square mile to a depth of more than 1000 feet.

The required excavations would dig five Panama canals each year.

Modern transportation annihilates distance. Ore is being hauled at the rate of nearly 1,000,000 tons annually from Chile to United States, 5000 miles. North Atlantic countries will be the chief exploiters of iron ore in outlying regions of the world.

The Greatest of All World Trusts

A PART of the human race through a fortunate combination of circumstances finds itself in possession of mineral supplies in favorable geographical environment which cannot be duplicated elsewhere, and which will insure a certain predominance in world affairs. This could hardly have been anticipated in the long evolution of the race and its many restless migrations.

When we of the favored nations come to realize the accidental nature of our control of this environment it should be easy to establish the concept that this is in the nature of a trust, to be managed in the interests of world welfare. A narrower national point of view, adhering closely to the theory of the survival of the fittest in a struggle for existence gives a gloomy outlook for many parts of the world.

* * *

SELF-DETERMINATION of nations is permanently limited in certain respects by their capacities for iron and steel development. If a nation without iron and steel wishes to live like the western nations, as most nations now do, it must come to terms with nations controlling the essential material bases for such living.

Racial and cultural characteristics may be maintained, but self-determination can hardly be extended to such elements of power contained in control of iron and steel or other essential industries which cannot be supported locally.

Turkey, for instance, may play a lone hand up to certain limits in its laudable effort to preserve its national life, but sooner or later it will need to come to working arrangements with foreign industrial powers, involving some measure of subordination to them, if it is to accomplish some of the desired changes in material conditions of living.

* * *

IT IS becoming more clearly apparent every day that in the fight for export trade, the field is narrowing down rapidly to three or possibly two world units, and that the advantage in this field thus far is with the industry covered by the Continental Steel Pact. Since 1913 the exports of iron and steel from the United States have dropped from 17.8 per cent to 10.8 per cent of the world's total, and those from Great Britain from 30.7 to 24.1 per cent, the loss in each case accruing to the Continental Steel Pact.

—From C. K. Leith's "World's Iron Ore Supply."

See opposite page.

Steel To Depend on Southeastern and Foreign Iron Ores

American Industry Must Put Chief Reliance on New Supplies by End of Century—Peak in Mesabi Production Coming Between 1945 and 1950

By C. K. Leith

THE dominant geographic features of the iron industry of the United States are the use of great quantities of high grade iron ore from the Lake Superior region, the cheap transportation of this ore by way of the Great Lakes, and the smelting of the ore principally in the region contiguous to the lower lakes, because of its possession of abundant coking coal and of its proximity to centers of consuming population. There are large deposits of iron ore and coal around Birmingham, Ala., supporting a subsidiary unit of the industry, and there are deposits elsewhere of less importance. Iron ores in relatively small quantities, 3 to 4 per cent of the total consumption, are imported from Cuba, Chile, Sweden, Spain, Africa and Newfoundland, not because there is insufficient domestic ore available, but because foreign ores are more cheaply available than Lake Superior ore to some of the plants near the seaboard. The United States is largely dependent on imports for the various alloy metals, the "sweeteners" necessary in the making of steel, such as manganese, chromium, tungsten, molybdenum, vanadium and nickel.

For more than 50 years the principal reliance of the United States has been on Lake Superior iron ores, which have furnished about 84 per cent of the total production. Lake Superior ores come from six widely separated districts in three states. They are mainly hematite, with upwards of 50 per cent iron, and with phosphorus content suitable mainly to the basic open-hearth process, but subordinately with phosphorus low enough for the acid bessemer process. The principal district is the Mesabi of Minnesota, which in recent years has produced annually over 60 per cent of the Lake Superior total and up to date has produced 58 per cent of the grand total. The geological occurrence of the ore of this range makes it possible to measure future tonnage with some accuracy and to foretell that the peak of Mesabi production of ores of present merchantable grade will be passed somewhere between 1945 and 1950, after which, during a period of perhaps 15 years, there will be a rather rapid decline in ore mined.

"Deficiency in Twenty Years"

THE peak of Mesabi ore production of present merchantable grade will be passed somewhere between 1945 and 1950, C. K. Leith told the World Engineering congress, in Tokio, in October. Despite readjustments in the Lake Superior district "there will be after 1950 a deficiency to be made up from other ores of the United States and from imports." And "by the end of the century the principal dependence of the United States is likely to be on its southeastern ores and on imports." C. K. Leith is professor of geology, University of Wisconsin, Madison, Wis., and a noted authority on iron ore. The accompanying article is from his paper "The World's Iron Ore Supply," written for the World congress.

Must Turn to Other Districts

This decline will require more intensive mining from the other districts of the region, which by virtue of more complicated geologic conditions, have not yet disclosed their total reserves. Development of new ore on these other ranges has about kept pace with mining, and it is likely that this relationship will continue long after the Mesabi district is virtually exhausted. However, it is impossible for these ranges to supply all or even a considerable part of the deficit created by the exhaustion of the Mesabi.

There will be increase of beneficiation of low grade ore. Beneficiation has already come to play a considerable part in the western Mesabi district, and similar projects have been tried in other parts of the Lake Superior region. It is only locally and very exceptionally that the product can yet compete with the rich ore concentrated by nature, but it seems a safe prophecy that, as the richer ore is depleted, beneficiation will play a progressively larger role. To produce by this means the volume of ore now supplied directly from the ground is perhaps physically possible, in view of the large size of low grade reserves, but cost undoubtedly will impose limitations on the indefinite expansion of this industry. The present heavy taxation of Lake Superior ores is retarding the advance of beneficiation. This is particularly true on the Mesabi range, where the progress of beneficiation has been about stopped in recent years by the necessity, created in part by heavy taxes, of mining only the low cost, open pit ores. For the same reason the mining of underground ores has relatively lost ground. The result of this tendency is the present rapid depletion of open pit ores, leaving unnecessarily large proportions of underground ores and ores capable of beneficiation to be taken later at higher cost. Efficient and conservational mining of the ores as a whole would undoubtedly be promoted by a lessening of the tax burden, which would permit the larger use of the high cost beneficiated and underground ores before the open pit ores are exhausted.

In general, it seems likely that in spite of adjustments within the Lake Superior region in the way of more

(*Continued on Page* 1187)

Industrial Research Should Open Ways to Unlimited Change

Every Industry Interested in Future Growth Should Devote to Scientific Research a Small Fraction of Its Profits

By Dr. Willis R. Whitney

Vice President and Director of Research Laboratory, General Electric Co.

INDUSTRIAL research may be defined variously, but as it is entirely a matter of change, its meaning to different industries will vary with its application. Research is a parent of industrial growth, the other parent being the will to live better. There was a time when most work actually was enforced by hunger or other animal needs. Men, obliged to work or starve, felt the continuous pressure as external and therefore distasteful. So there developed an hereditary tendency to dislike extra work. This happily is proving to be a recessive, not a dominant trait, and, moreover, there grew up a persistent counter-trait, best described as interest, inquisitiveness and constructive appreciation. This counter-trait is successfully opposing inertia, and bringing about effective amelioration, with reduction of physical labor, for it constructs pleasure and happiness out of experiment and research.

This growth of creative spirit has reached a point where man now heartily enjoy working. This work is not solely for food and shelter. That need often is almost forgotten. Men work because of the artistic or creative urge. They have proved it worthwhile to analyze their environment and to learn by experiment what additional wants and acceptable products can be created.

It is as though we had awakened to a new faith, a faith in the exactitude and invulnerability, the certainty and reliability of countless natural laws, and in the limitlessness and flexibility of their applications. We must hold to the proper use of these laws as the work for our new faith.

As long as the whole effort of an individual was only sufficient to insure his survival, little could be spent in preparation for more remote interests. And even a pair of protected cave-dwellers could not have been advised to divert the efforts of one of them to research before the other could provide living for two. But as time passed, organizations developed and grew large enough so that each member was a specialist of some sort.

Thinkers Start Research

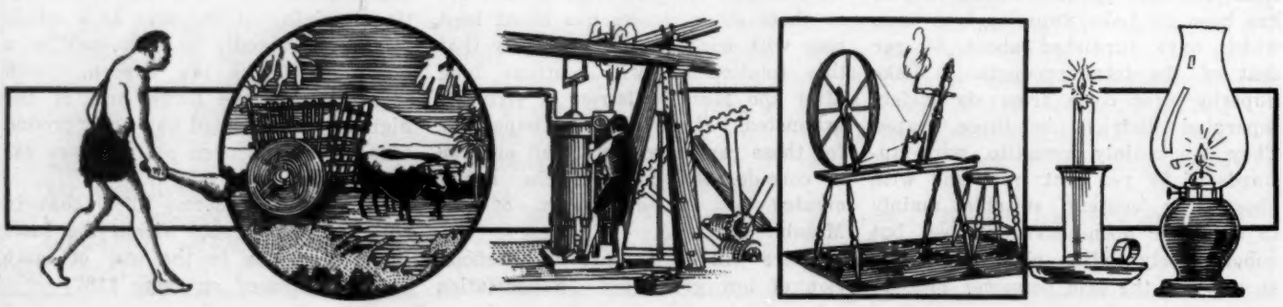
In all civilized countries research has had about the same history. It received its earliest impulses from those who spent most time in constructive thinking, and so monks were found producing new knowledge in chemistry and physics and even in heredity. The organized centers of higher education in every country soon became the source of much basic psychical knowledge.

Perhaps in no one case is the effect of long continued academic research more in evidence than in the chemical industry. For a half century the study of organic chemical reactions, without reference to industrial applications, was carried on apparently only for the stimulus which new and exact knowledge gave the minds of men interested in education.

The study of physical laws also showed at an ever increasing rate that intelligent experiment, which brought us the steam engine, the spinning frame, the printing press, the electric generator, and thousands of other advances, could reduce hard labor and increase happiness without limit. Each new industry continued to find within itself additional means of improvement. They all were based on the creative instinct of men who were not too heavily hampered.

Still more modern devices and industries well illustrate this point. No one of the many leaders in the automobile industry, for example, started manufacture or continued improvement because of the hunger urge (sometimes, indeed, in spite of it.) The race has continued along the promising and endless road of appreciation, not under the goal of necessity, but under the beckoning and growing light of understanding. Call this the creative urge or the encouraged inquisitiveness of a changeable animal, the direction and the outcome are the same.

It now runs counter to our instincts to neglect buried treasure. Our ex-



perience assures us of an infinite wealth of still undeveloped science. The indifference of millions of people is completely offset by the inquisitiveness and appreciation of individuals.

There is some danger of overpopularizing industrial research and also of overdoing the use of the term. The result of attracting special attention to research may be to suggest something essentially false, like a general panacea for work or a cure for all economic ills, and so induce unprepared people to undertake ill-advised work. The excessive demand for scientists in recent years has indicated such misconceptions.

Perpetuates Dissatisfaction

We overdo the use of the term "industrial research" when we apply it, for example, to the testing of materials in order to check up on specifications. That it is not. It is something designed to discover untested materials and processes, to bring about better use of old materials, to reveal new wants, create new desires and actually predetermine new needs. One might even say that its aim is to perpetuate dissatisfaction with things as they have been and insure open ways to unlimited change.

It is a matter of experience that most manufactured articles sooner or later are superseded by others. The new may be entirely different from the old, or may differ only in the method of production, but the successful manufacturers are those who are prepared to change one or both of these criteria. There is no inherent reason why a manufacturing organization need disintegrate merely because a particular product which it once produced is displaced by something better.

It is not contended that industrial research is the key to all human improvement, though general research may be. It is for our age to discover and remove the obstructions in the road to better living in the future. In this, industry must help. New engineering involves making and moving everything more quickly and easily, whether it be man's thoughts or the products of factory or soil. This effective shortening of time and distance also helps to obliterate differences in custom and in tongue, and thus eliminates ground for misunderstandings.

One of the leading merchants of the country, E. A. Filene, Boston, recently wrote: "The big volume of luxuries, comforts and necessities which we produce and consume has been largely due to research, to an application of the same scientific methods in the conduct of business as have been so successful in medicine, biology, physics and astronomy." In other words, specialists advanced our knewledge by careful experiment, and today, in our production and consumption of luxuries, comforts and necessities, we are scientifically more active than ever before.

Medicine, always the product of experiment, has become more and more orderly. Never was a time when new chemical compounds and applications of new principles were being studied so generally. Biology, with its researches in the growing cell, has increased enormously our understanding of living processes, even to the mechanism of heredity. It has placed in man's hands new instruments for an extensive line of useful researches, and never has there been so much value in sight. Physics, through relatively simple experiments, has done more in the past two decades to inform us about the nature and properties of matter than in all preceding time. It has been marked by theory and speculation, but largely by a kind of speculation which was at once capable of material investigation. Astronomy, a science which has always called for the utmost credulity, has advanced through relatively simple researches supporting exceptionally radical speculations, and with its increasing dimensions it still supplies principles of similitudes which are exceedingly fertile and necessary for interpreting modern scientific conception of matter. And so it must be with industries. They will develop not only greater economies and more complete substitution of mechanical power for human effort, but they will disclose with new discoveries those unexpected utilities which come from the interlocking of new knowledge in different fields.

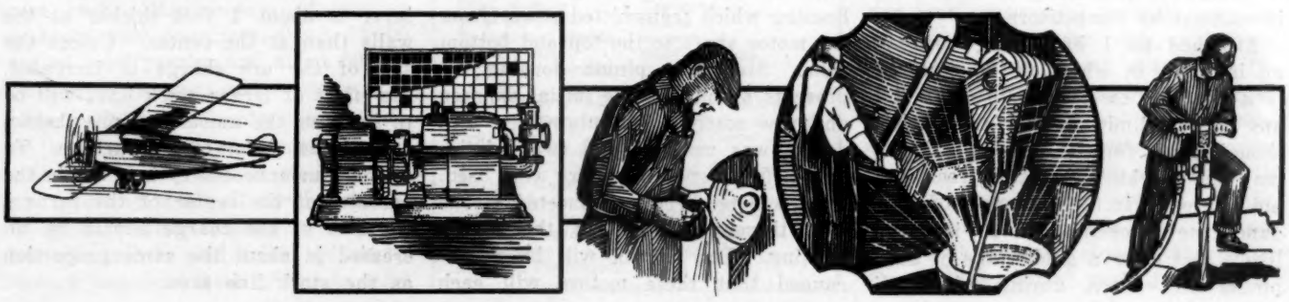
Industrial Research Young

Organized industrial research may be attributed to the present century. At the beginning of this century there were practically no industrial research laboratories in the United States, and the word "research" was almost exclusively confined to college and university. Now a recent report of the National Research council lists a thousand research laboratories independent of colleges and government bureaus. Three hundred were listed in 1920.

It would not be difficult to picture the influence of organized research in such active industries as aeronautics, electricity, automobiles or radio. These are *in toto* entirely modern. Here many youthful and inquisitive minds see the light and feel the creative force. Their work has been well advertised. But in looking over the laboratories of the country one sees

Meaning of Term Often Is Misunderstood

THE purpose of industrial research is not generally understood, according to Dr. Willis R. Whitney, vice president and director of the research laboratory, General Electric Co., Schenectady, N. Y. By way of explanation, Dr. Whitney says: "We overdo the use of the term 'industrial research' when we apply it, for example, to the testing of materials in order to check up on specifications. That it is not. It is something designed to discover untested materials, to reveal new wants, create new desires and actually predetermine new needs. One might even say that its aim is to perpetuate dissatisfaction with things as they have been and insure open ways to unlimited change." This definition as well as the accompanying article on industrial research is taken from a paper which Dr. Whitney presented at the World Engineering congress in Tokyo, Japan, in October.



how it also has been with less popular things. For example, as organic chemical knowledge progressed a few explorers attacked the chemistry and physics of cellulose. Here was one of nature's most widely spread products. It seemed to be so complex, when compared to the simple compounds which chemists already had understood and synthesized, that few were bold enough to attack it. But Tollens, Fremy, Ost, Schwalbe, Chardonnet and Cross and Bevan were such pioneers, and now we see that wood pulp, the cellulose mine, continually is yielding new products. Its chemistry and physics are being studied widely.

Work Is Extensive

A generally similar effect of research can be found on many sides, but it seems usually true that the more modern the industry the more extensive is the application of research to it. Coal, iron, cotton, wool, leather and ceramics seem less thoroughly cultivated from the research standpoint than such corresponding, but slightly more modern subjects as petroleum, aluminum, cellulose, dyes, rubber and paint. In the former group the efforts to produce in large quantities postponed the need of research work.

But even with the older industries many marked effects of research have resulted. We now have glass cooking utensils which the new knowledge of controlled expansion coefficients made possible, and recently paraffined paper bottles have been introduced in New York to reduce the cost and increase the cleanliness of bottled milk. Countless new solvents are now being produced through researches on petroleum, and by the study of gaseous combustion, an enormous field for cutting and welding steel has been developed.

Advocates Research Fund

It is easy to speculate in industrial futures, but to do it carelessly is not industrial research. Every industry interested in future growth should devote to scientific research a small fraction of its profits. But what fraction shall it be? Experience and not experts should decide that, bearing in mind the possibility of a greater investment by competitors.

Attached as I have long been to an industry in which active research is a habit, I cannot fix in my mind any upper limit to useful novelty, though I can for the rate at which it may be sought. For that reason I am interested in the statement of Haldane, the biochemist: "It is quite likely that after a golden age of happiness and peace, during which all the immediately available benefits of science will be realized, mankind will very gradually disintegrate." This seems based on bad arithmetic. I hope that the golden age of happiness and peace will forever be the one just ahead of the present and that for which man can forever prepare. There are several hundred thousand years of experience which warrant this hope. I think that the world can no more realize "all the immediately available benefits of science" than one could realize the volume or capacity of an infinite pyramid by starting to creep blindly along one of its outer edges.

But if we confine our estimate of the importance of industrial research to a survey of material benefits, we lose sight of what may well be its supreme achievement. For industrial research affects our creeds. Biology shows us how far we have come from the amoeba, and shows us, too, the kind of co-operative effort which insured the advance. We may, therefore, believe that when research is utilized by all industries, natural by-products will be further mental development, more serviceable idealism, fuller understanding among peoples and better direction of the affairs of nations.

New Beam Mill Requires a Special Drive

A new beam mill to be installed at the South Chicago works of the Illinois Steel Co., South Chicago, Ill., is requiring several modifications from the usual in the mill and electrical designs. This mill will produce a wide-flange section which differs from the standard I-beam in that the flanges are of uniform thickness instead of being tapered and the thickness of the metal in the flanges can be varied over a wide range. Because of its special features, this section has come into heavy demand in building construction.

An example of the modifications is shown in the case of the two 5000-horsepower reversing motors to be used on a 54-inch reversing blooming mill. Heretofore, in reversing mill drives, one motor was used to drive both rolls of the mill through a pinion housing which transmitted power from the motor shaft to the top and bottom rolls. Since the pinion housing represents a considerable initial expense and was costly to maintain, the mill design was modified and two individual 5000-horsepower motors were used. Each will be directly connected to one roll, thereby eliminating the pinion housing. The control will be so arranged that these motors will each maintain their proper speed relations at varying speeds as well as take their proper share of the load.

The entire mill has been gone over from the same standpoint, and as a result, special features of design will be incorporated in the equipment to be supplied. When the mill is completed according to the builders it will be the most nearly automatic mill in the world.

The order for all the electrical equipment for the main drive was placed with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Welding Aids Building of Auto Bodies

(*Concluded from Page* 1169)

steel. As its name implies, the all-steel body is all steel. The interior frame and the exterior covering are electrically and oxyacetylene welded into a single, compact unit of resilient steel.

The all-steel body is safe to drive because the great strength of steel permits the use of narrow pillar posts, resulting in less than half as much obstruction to driving vision as bulky wooden pillar posts. It is possible for the driver to see all the road and approaching pedestrians and cars. Not only the front pillar posts, but all the uprights, are of slender steel construction, allowing more light, more air and greater vision of all the occupants.

The all-steel construction is durable. It has long life, depreciates slowly, and its sturdy construction gives to the driver and occupants alike, the same safe feeling which is enjoyed by the occupant of today's modern all-steel railway coach.

Stock Line Area Affects Ore Distribution

Observations made by the North Central experiment station of the bureau of mines indicate that the angles of repose of ore and coke in the blast furnace are about 34 and 27.5 degrees, respectively. Calculations based on these angles indicate that the ore layer is about 1 foot thicker at the walls than at the center. Unless the size of the ore charge is increased, the effect of larger stock lines will be to increase the amount of ore thrown toward the center of the furnace. To prevent an unnecessary increase in the porosity of the center of the furnace the size of the charge should be increased in about the same proportion as the stock line area.

Large Uses of Steel in Small Ways

153rd Article

Ironing Machines

MANUFACTURE of ironing machines for the home is forming a growing outlet in the use of metals. Refinement in the making of this product, which is another of the devices developed in recent decades to lift drudgery from household work, is adding to its popularity.

During the past year or two, lighter so-called portable ironing machines and other modifications in design have taken form. Coming into being as a full-fledged industry largely in the past 15 years, the manufacture of ironing machines has grown into steadily heavier volume. Since the days of automatic control, sales also have gained momentum. In the past year sales totals have reached approximately 28,000 varied units in numerous types. In 1927 total sales of gas and electrically heated ironing machines for the home totaled 27,208. Since 1921, a steady curve upward in production and sales has been recorded.

25,000 Tons of Steel

The majority of the makers of ironing machines are the large electrical goods manufacturers and many of the builders of washing machines, of which there are more than 30 in the United States and Canada. Leading among states in production are Ohio, Illinois, Indiana and Wisconsin. Several hundred pounds of gray-iron castings, aluminum, brass, bronze, steel and alloys go into the making of some of the types of ironing machines. The average weight of the metals used for each unit, exclusive of motors, is about 200 pounds. Small machines weighing only 30 to 35 pounds now are being made. Products of a number of the makers of this product weigh 300 pounds or more each. Manufacture of ironing machines now consumes about 25,000 tons of steel yearly, and about 500 to 600 tons of castings and other metals.

The rolls, padded with cotton, jute and muslin sheets, are made of cold finished or drawn carbon steel bar or light shafting stock, of special analysis steel. Some manufacturers enclose the roll in cold rolled 1-inch to 1½-inch seamless steel tubing to take up the pressure. Sometimes the enclosing tubing is made of lighter gage sheet steel. The roll shaft itself usually ranges from ¾-inch to 1½-inch in diameter and is from 25 to 45 inches in length.

Aluminum castings for the gear housings are commonly used, while brass and bronze castings are the gear, bearing and pinion stock. Pinions also are made of special analysis and hardened steel. Hubs sometimes are pressed from lighter gage galvanized sheets. Lower frames of the larger machines are of gray iron castings. Pressed steel tables with legs of steel angle bars also are used. In certain of these designs, the castings form the larger percentage of the weight of the metals. Some models also use ball bearings.

Fabrication of the metals by the manufacturer is performed largely on standard machine tools, but special fixtures have been designed by builders of these machines for drilling and milling. Several manufacturers have designed special cold rolling equipment. Much attention is given to the final polishing and buffing operations, for which special equipment has been adopted. The products are finished with high grade lacquers, and both spraying and dipping are employed in the final finishing.

Market Prospects Promising

Prospects for an even wider marketing of ironing machines are promising, despite the growth of the commercial laundry business and the increasing number of people living in apartment homes in the larger cities. Production, it is pointed out, is not keeping up proportionately with the increase in the number of homes wired for power.

On the basis that the zone of greatest activity with respect to gas flow and stock movement extends over an annular ring 4 feet wide, about 28 per cent of the hearth area in a 17-foot hearth blast furnace and about 50 per cent in a furnace with a diameter of 27 feet relatively is inactive, according to tests made at the North Central experimental station of the bureau of mines. This inactive central area causes slower travel of stock in the central part of the stack.

THIS is the one hundred fifty-third of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Fire Screens	*Cork Screws*
Voting Machines	*Universal Shafts*
Display Racks	*Sewing Machines*
Steel Stamps	*Lanterns*
Wire Screens	*Cleats*
Typewriter Spools	*Axes*
Chain Hoists	*Steel Ceilings*
Newspaper-Vending Boxes	*Card Tables*
Wire Lamp Shades	*Welding Rods*
Belt Fasteners	*Washing Machines*
Sap Spouts	*Resilient Road Guards*
Flexible Conductors	*Screw Drivers*
Foundry Flasks	*Windows*
Teletype Machines	*Car and Bus Seats*
Porch Furniture	*Bathroom Cabinets*
Telegraph Wire	*Lock Washers*
Waste Receptacles	*Steel Scaffolding*
Chain Screens	*Pavement Armor*
Louvred Ventilators	*Torches*

Developing Methods To Prevent Waste in Steel Industry

Suggestion System Results in Many Good Ideas—How United States Steel Corp. Staged Campaign—When Obsolete Equipment Should Be Removed

By Frank Parrish

Supervisor of Inventories, United States Steel Corp.

WASTE prevention is a very comprehensive subject. It includes salvage, reclamation and conservation. Salvage is defined, in part, as being anything saved from being useless, and waste is likewise defined as thoughtless or unnecessary expense; expense to no purpose or without return; loss through neglect or improvidence; prodigal or extravagant use; something rejected as worthless or not needed; and the refuse of a manufacturing process or industrial art.

Much has been and is being said bearing on the subject. Several organizations make a business of supplying posters, slogans and programs for waste prevention campaigns. The department of commerce at Washington has an important bureau devoting its time and resources to questions of simplification and elimination of waste. It is next to impossible to read or hear all that is printed or said.

The subject, as a whole, is too large to be covered by a paper of this kind. It will, therefore, be my purpose to deal, principally, with waste and its prevention or salvage as applied to expense and materials incidental to operation, rather than to those important enough to be detailed on cost sheets as directly entering into regular product. Other phases of the subject may be mentioned in a general way.

Certain railroads and other large users of iron and steel products report very impressive salvage or reclamation savings (equivalent to waste prevention) from the disposal of scrap. Iron and steel scrap is not an incidental item in steel making. It is rather a necessary and very important raw material. Even assuming that a steelworks could not itself use the scrap it produced, its volume would be such that it could not be regarded as anything other than regular product, to be disposed of as such.

In the handling of scrap, however, there is opportunity, on the whole, for the prevention of expense that is unnecessary and consequently wasteful. Furnace plants must keep this expense to a minimum as it is directly reflected in their costs, but in detached or outlying operations not making ingots or castings, nor regularly handling heavy steel products, the handling of scrap does become somewhat incidental. The industries represented by membership in this Institute consume yearly a total of not less than 25,000,000 tons of scrap. Much of it has to be handled several times in its journeys from the pick up points, by way of scrap yards, cars, etc., to the steel furnaces. Each ton of scrap entering into ingots or castings is probably handled, on the average, as much as three times. If an average saving of as much as 5.00c a ton for each handling could be made, the aggregate annual saving would be nearly $4,000,000 in the mere handling of scrap alone.

Foundries Use Some Scrap

In the making and fabricating of steel considerable scrap is produced which, by reason of its chemical content, is highly desirable for foundry purposes. The foundries could not, however, absorb all such scrap made, and it would not as a rule be economical for a steelworks to segregate and sell it. With such increased supply available the premium sometimes paid would very likely be reduced to a figure that would not pay for the disarrangement of schedule and smooth working continuity which it is necessary for a steel works to have in the handling of so large and important an item. The supplying of this low phosphorus or otherwise desirable scrap for foundries is, therefore, largely left to fabricators and scrap dealers.

More will be said later concerning scrap losses that are sustained by delay in making scrap use of otherwise very doubtful items in the shape of discarded equipment or shop leftovers. There has been more than one case on record where the melting or sale of scrap of "bone yard" material would have avoided borrowing money to meet the payroll.

A means of waste prevention that is becoming more and more employed is the drive or campaign. In connection with a campaign of this nature, a prominent manufacturing company referred to the history, purposes and methods of this movement as follows:

The subject of "Waste Elimination and Prevention" is receiving each year more concentrated study by the industries and the utilities, for it is realized that the wastes of today will, if prevented, go to the making of the profits of tomorrow.

To co-ordinate these individual and widely scattered efforts the five important management associations of the United States—the management division of the American Society of Mechanical Engineers, the American Management association, the Taylor society, the Society of Industrial Engineers, and the National Association of Cost Accountants, with the co-operation later of the department of commerce and the United States Chamber of Commerce—instituted several years ago a movement known as National Management Week, during which week organizations of one kind and another have been invited to discuss problems of management at various centers over the country.

As a natural outcome of this movement there has followed what is becoming known as an "Annual Elimination of Waste Campaign," at present being sponsored by the American Society of Mechanical Engineers with the American Management association co-operating. It has given such excellent results to those who have already participated that it is hoped

more and more concerns will join and make it truly national in scope.

It is intended by this means to supplement the regular day-in and day-out work of waste prevention and elimination already in effect in many plants, for it is recognized that additional impetus can be given to such work by a short, properly conducted campaign in which appeal is made even more to the actual workers than to the supervisory staff.

April has been chosen as the most suitable time for holding the campaign but any other month may be taken. The campaign may further be made to cover a portion or all of the month as any individual concern sees fit.

The program may be made to suit as there are many different methods that can be utilized. Undoubtedly, however, the most effective and spectacular is the exhibiting of various items on suitable display boards. These should include tools and materials daily used and broken, lost or spoiled, as well as legends showing other items of expense like gas, electric light, air, water, steam, oils, waste, paper towels, etc. Opposite each item or legend may be placed the cost value or the equivalent to the company or the worker or both. Additionally, meetings can be held of the men and the supervisory forces. Use may be made of the safety committee, or any other shop committee already functioning, in the great majority of plants.

One of the most valuable adjuncts is a suggestion system. Workmen should be encouraged to submit ideas on the elimination and prevention of waste, as well as on all other worthwhile matters, because the employes in shops and offices have been found to constitute a rich field of practical ideas. Once installed, the suggestion system should be continued throughout the year.

Designates Prevention Week

In the fall of 1928 the management of United States Steel Corp. recommended to each of its subsidiary companies that the third week of October be set aside as "Waste Prevention Week."

The subsidiary companies were requested to advise all employes as to the purpose of the campaign, but otherwise to devise and carry out their own methods, no limitations to be imposed and all employes encouraged to make recommendations on any phase of operation from the larger manufacturing processes down to the minute details of business, including prevention of accidents.

The response was surprisingly large. Suggestions were received by the thousands, and the work of classifying and appraising them provided a liberal education in the operations covered.

Many employes took this opportunity to display their talents as artists, poets, cartoonists or humorists, but, with it all, there was the sober realization that their interest was bound up with that of the organization employing them, and that the organization would have a hard fight to get regular business, and consequent operation, if handicapped by wasteful and costly methods.

Each subsidiary company measured its own results and made its own awards. A combined classification of the suggestions for quality, and the percentage of each kind, would be about as follows:

Appraisal	Percentage
Very good	0.5
Good	13.5
Anticipated	30.0
Indifferent	56.0

By "anticipated" suggestions are meant those which were already in effect. By "indifferent" suggestions are meant those either valueless, fantastic or practically impossible, an example being the suggestion that a cheap and never ending supply of scrap could be provided by arranging to have laws passed by all states making it illegal to abandon an automobile.

It might also be mentioned that a more critical analysis of the suggestions found to be good would show that, due largely to local conditions, about half of them, while sound basically, were either partly or wholly impracticable for the particular thing or place referred to.

A composite reflection of the general results would show:

Stimulation of committee work concerning waste prevention;

Closer inspection for obvious or well defined wastes;

More intelligent salvage of small items;

Better planning of a job or repair work to save lost time and excess motions;

Closer inspection of discarded tools before scrapping;

Better sorting of nonferrous and other miscellaneous scrap;

Better control of materials, tools, etc., having a tendency to become scattered;

Reprocessing rather than unnecessarily remelting off-size or distorted materials;

Increased use of short length materials;

More intensive study of reclamation possibilities for items heretofore considered worthless or nuisance waste;

More pride in plant cleanliness;

Better understanding of the problems of management on the part of all employes;

Increase in the feeling of loyalty to the employing company; and the encouragement given to creative thinking, which, in the opinion of the president of one company, will have more value in the final analyses than the suggestions.

Possible Waste Causes

It is not considered necessary to go into extended detail in explanation of the headings given in the preceding paragraph.

Among the common items that could be mentioned are:

Leakage in pipe lines;

Extravagant use of lubricants, waste and other mill supplies, and failure to reclaim such materials when profitable to do so;

The unnecessary burning of lights, use of heat, or running of water;

Saving of fuel in the cleaning of furnaces;

The unnecessary use of power by failing to turn off motors, or to use belt shift;

Unnecessary delays to locomotives, trucks or other motive equipment;

Utilization of unused laboratory samples of fuel, etc.;

Unnecessary telephone or telegraph expense;

Waste of office supplies;

The use of discarded forms or the backs of old reports for scratch pads, rather than new paper;

Reclamation of broken or worn tools;

Salvage of containers, packing materials, etc.;

The elimination of useless reports or the failure to combine into one report information required by several different officials or depart-

Stop Waste; Increase Loyalty

ABOUT 13.5 per cent of suggestions submitted by employes of subsidiaries of the United States Steel Corp. during its waste prevention week are classified as "good"; 0.5 per cent "very good"; 30 per cent anticipated and 56 per cent indifferent. Large savings will result from acceptance and operation of the suggestions, but in the opinion of the author they will likely be less than the intangible benefits resulting from the increased inquiry, efficiency, carefulness and loyalty which the campaign induced. The article is an abstract of a paper presented at the annual meeting of the American Iron and Steel institute, New York, Oct. 25.

ments, thereby making one report do for all.

Among the suggestions either offered or developed during the campaign, and dealing with the somewhat larger operating processes more or less peculiar to the steel industry and its allied or affiliated raw material, transportation or service companies, might be mentioned the following:

Cutting down the thickness of hot saws used for a certain operation by 1/16 of an inch, whereby the tonnage of saw chips was reduced 2000 tons annually;

Platform between two blowing engines, allowing one man to run both engines. Estimated saving $5000 per year;

Reduction of labor required for taking and preparing samples of ore. Estimated savings $3500 per year for one works only;

Certain changes in limestone rescreening plant, which would make a return of $8250 yearly;

The installation of distant or secondary signals, the connection of additional switches with interlocking plants and other practices leading to fewer slow ups and stops of heavy trains carrying ore. Annual saving difficult to estimate.

Benefits Are Manifold

It would be next to impossible to measure in money the savings that will result from the acceptance and operation of the suggestions which gave promise of saving money; but this saving, great as it might be, would very likely be less than the intangible benefits resulting from the increased inquiry, efficiency, carefulness and loyalty which the campaign induced.

A perplexing salvage problem in the steel industry is the economical disposal of machinery or power plant units which have become obsolete for economical use where installed. In many cases such equipment could put in years of useful life at some other place where its economical capacity would meet the requirements. But, for various reasons, it is often hard to get any dismantled piece of equipment released for transfer or outside sale. It is possible that the salvage return quickly available is not as high as that which was estimated when replacement was being considered, and the impulse may be to wait for a better prospect. The superintendent or manager may have sentimental reasons for holding it, or may feel that it is a good thing to have around, but is very rarely put back into use at the plant which it formerly served. The result often is that it eventually becomes so far behind the times or depreciates so much by reason of its idleness that no one wants it. The longer it is held, the greater the expense of holding it and, except in extremely few cases, the less it is worth.

For a number of years the railroads have been replacing their locomotive equipment and rolling stock with units of greater power or larger carrying capacity, the result being that, in actual numbers, more units have been retired than have been bought, notwithstanding the fact that both power and carrying capacity have been increased. To a large extent the same process is working throughout the steel industry. Consequently the return for second-hand or discarded equipment has been rather low, a condition which promises to continue for some time, and which favors the expeditious scrapping of such discarded or retired equipment as may not have a good chance for early re-use as such.

Determining, if possible, the disposition of equipment items at the time of their being scheduled for discard would save much money in the shape of dismantling expense, extra handling, transportation expense and depreciation. The quicker obsolete equipment can be turned into liquid assets the better. Scrapping at time of dismantling is very likely to be much more profitable than holding for an indefinite time in the hope of getting a return of even four or five times the scrap value.

Steel Treaters Meet in New York, Feb. 7-8

The dates of Feb. 7-8 have been designated for the semiannual meeting of the American Society for Steel Treating in New York. Headquarters will be at the Hotel Pennsylvania. Three technical sessions are scheduled, two on Friday and one on Saturday morning. One session will be conducted as a symposium on sheet steel while the other sessions will deal with nitriding, steel castings and heat treatment, subjects which attracted wide attention at the Cleveland convention in September.

The board of directors and publication and recommended practice committees will conduct meetings on Thursday, Feb. 6, the day preceding the opening of the semiannual meeting. In addition, the national finance committee will meet on Feb. 5.

Julien Deby states that "iron was made to perfection in the Netherlands" in the twelfth century.

Steel Fabricators Ready for Biloxi Meeting

The American Institute of Steel Construction Inc. has announced the program for its seventh annual convention to be held at the Edgewater Gulf hotel, Biloxi, Miss., Nov. 12-15. Tuesday, Nov. 12 will be taken up with a trade practice conference of the structural steel industry under the direction of W. E. Humphrey, federal trade commission, Washington. The convention proper will open Nov. 13 with sessions morning and afternoon and another on the following morning. A golf tournament has been arranged for Thursday afternoon with the annual banquet in the evening. Business sessions are scheduled for Friday morning and afternoon.

Following is the detailed program:

Wednesday, Nov. 13

MORNING

President's annual address by Charles N. Fitts.
Report of executive director by Charles F. Abbott.
Report of chief engineer by Lee H. Miller.
Report of director of engineering service by F. H. Frankland.
Committee reports.

AFTERNOON

"Fifty Years of Progress in Bridge Engineering," by Dr. D. B. Steinman, consulting engineer, New York.
"Steel Dams, Lock Gates, Caissons, etc." by Henry Goldmark, consulting engineer, New York.
"Design of Steel Column Slabs," by Kenneth G. Merriam, assistant professor of applied mechanics, Worcester Polytechnic institute, Worcester, Mass.
Address by Wilbur A. Claflin, assistant supervisor, real estate loan department, Prudential Insurance Co. of America, Newark, N. J.

Thursday, Nov. 14

MORNING

Construction symposium on welding, riveting, gas cutting, battledeck floor construction and its fireproofing.

AFTERNOON

Golf tournament.

EVENING

Annual banquet with President Charles N. Fitts, toastmaster.
"International Co-operation," by Vincent Massey, envoy extraordinary and minister plenipotentiary from Canada to Washington.
"Women's Influence on Steel Purchases," by Christine Frederick, director of the Applecroft Home Experiment Station, Greenlawn, L. I.
"Industrial Co-operation," by W. E. Humphrey, federal trade commission, Washington.

Friday, Nov. 15

MORNING

"The Credit Statement," by Alexander Wall, Robert Morris Associates, Lansdowne, Pa.
"Sense for Dollars," by L. Seth Schnitzman, bureau of census, Washington.
Report of mill relations committee by H. A. Fitch, Kansas City Structural Steel Co., Kansas City, Kan.

AFTERNOON

Business session.

Treasury department has announced the allowance of drawback on iron and steel wire rope manufactured by the Pacific Wire Rope Co., Los Angeles, with the use of imported iron and steel wire on such wire in connection with wire of domestic manufacture.

Balanced Cooling Bed Eliminates Distortion of Rolled Stock

Material in Transit Held Against Guide by Slight Pressure of Skewed Rollers—Runout Table Delivers the Product to Machined Troughs

CHANGES in the design of cooling beds in the past 30 years have been more extensive than in the case of rolling mills. While a mechanical cooling bed then was installed only for the handling of such products as were too heavy to handle by hand, today practically all products are cooled on beds that not only eliminate manual labor but that also insure a more uniform handling of the product than is possible on a hand bed.

The more severe specifications as to straightness, coupled with the greatly increased tonnages produced on modern mills, tax even the most efficient beds. In many mills the production is curtailed by the limitations of the cooling bed.

A bed for handling merchant material, recently has been developed by Willis McKee, Cleveland. This bed, simple in construction, has a large capacity and is designed not only to eliminate distorting tendencies but to straighten the material as it advances down the runway and across the bed. This feature should eliminate much machine straightening that is now necessary in many cases. The runout is designed for the use of Schloemann-type motor rollers. These units are totally inclosed, alternating-current motors having their shafts held against rotation and the rollers mounted outside the rotor of the motor. The motors are mounted on two bars which are moved in opposite direction by a beam. Central of the motor rollers is a guide against which the material is held by a slight skewing of the rollers as it runs down the bed. When the piece is in the proper position, the angularity of the rollers is reversed. Momentarily this angularity is much increased and then is decreased to the same amount as before but in the opposite direction. When the angularity is reversed, the piece is delivered off the rollers quickly and the next piece, which is delivered onto the opposite side of the central guide, is made to hug this guide.

Design Obviates Off-Lead

The advantages of this central runout construction are that there is little off-lead inasmuch as the paths of the pieces on the two sides of the central guide are only a few inches apart. The use of the skewed rollers to produce a slight pressure of the material against the guide, tends to straighten the pieces and to eliminate the possible tendency to run off the rollers. Discharging the material from the rollers by changing their angularity eliminates the tendency to distort the bars. The material is delivered from the rollers to machined troughs. These are designed so as to tend to straighten the bars when they are thrown against the side. No lineshafts are required for the runout or for any kickoff.

The bed proper consists of two sets of moving and fixed, notched, machined supports positioned on the opposite sides of the runouts. Beneath the bed is a lineshaft on which are mounted, at regular intervals, two sets of eccentrics. One set controls the horizontal motion of the moving supports and the other the vertical movement through the walking beams. In this way practically any desired elliptical motion can be imparted to the moving supports. The normal position of the moving supports is when the two sets are at the same elevation, this being about an inch below

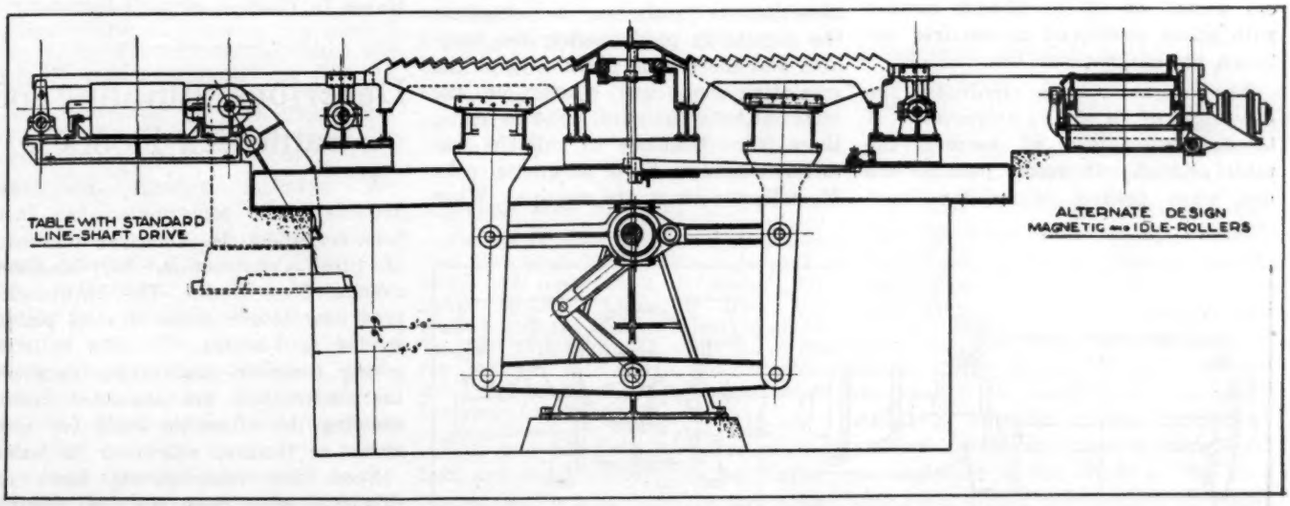


Fig. 1—Cross section of duplex balanced cooling bed showing bed tables with standard lineshaft drive and alternate design with magnetic and idle rollers

the elevation of the fixed supports.

The motion of the bed can be interlocked with the skewing of the rollers so that the bed will advance the material one notch automatically as soon as a bar is delivered into one of the troughs. When it is desired to advance the material, the motor is started either automatically or manually, and the shaft makes one-half revolution and is stopped automatically. Each set of moving supports moves through half of an elliptical orbit and stops, one set moving below the fixed supports toward the central runout while the other moves above the fixed supports and away from the runout. As one side of the bed returns to a position from which it can pick up the bars, the pieces on the other side of the bed are being carried one notch further from the runout. The bed can be designed so as to deposit the bars directly into the grooves of the fixed supports or to one side so that the bars will roll or slide into the groove.

One side of the bed counterbalances the other side so that the only power required is to lift the superimposed load on one side of the bed and to overcome friction and inertia. The motion need not be rapid. The bed is designed with ample head room beneath so that all parts are easily accessible. No rapidly moving parts or counterweights are provided in the bed thus minimizing hazards. Ample notches are provided to accommodate a mill operating at maximum capacity. The standard shuffle-bar construction is used.

The tables on the cold sides of the bed are designed either with the standard modern approved construction as shown in Fig. 1 on the left side of the bed or with a magnetic run as shown at the right side of the bed. This table consists of magnetic rollers placed on 30 to 40-foot centers with idlers positioned as required between the magnetic rollers.

The magnetic table eliminates the necessity of a long driveshaft, of beveled gears and of keeping the table aligned. It makes possible the use, when desired, of smaller diameter rollers, as there is no lineshaft to interfere with the shuffle bars. The elimination of the lineshaft on these tables is especially desirable on account of the frequent stopping and starting of the tables.

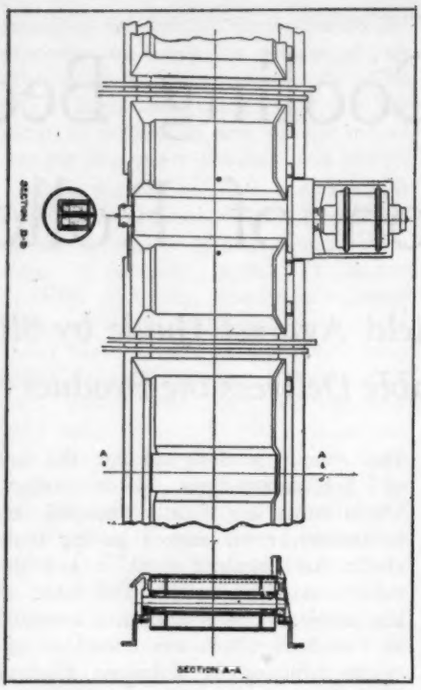


Fig. 3—Section of magnetic type shear approach table

The magnetic tables have the additional advantage that they will positively advance all the bars to the shear gage, and remove the necessity to advance individual bars to the gage by hand thus eliminating an operation which retards production and is hazardous.

The magnetic rollers have fixed magnets positioned within nonmagnetic rollers. These rollers have magnetic inserts for concentrating the magnetic flux. This type of construction is such as to eliminate the possibility of damaging the magnets and there is no possibility of the insulating compound getting on the material being handled. Furthermore, there is no tendency to pull the material sideways to a magnetic pole. No collector rings are required. When using magnetic rollers, only one lineshaft, exclusive of those required for the shuffle bars, is required for the complete cooling bed.

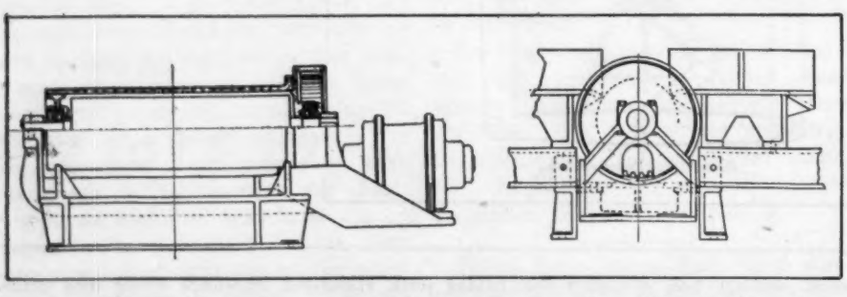


Fig. 2—General arrangement of magnetic roller with stand

Testing Society Going to Chicago in 1931

The 1930 annual meeting of the American Society for Testing Materials will be held at Haddon hall, Atlantic City, N. J., June 23-27, it has just been announced. The executive committee had felt it would be desirable to hold this meeting elsewhere and had suggested Chicago. It was found, however that arrangements could not be made for a meeting in the latter city at any time in June without conflict with other important meetings. Therefore it was decided to return to Atlantic City next year and to schedule the 1931 meeting in Chicago. The dates chosen for 1931 were June 22-26.

A regional meeting of the society will be held in Detroit early next year, probably in March. A one-day meeting is planned to point out what the society has done for the automotive industry. A number of papers discussing the testing and specifying of materials used in that industry will be presented at morning and afternoon sessions. A dinner will follow.

Consideration is being given to holding the spring group committee meeting in Detroit on the three or four days immediately following the Detroit regional meeting. With the annual meeting for 1930 scheduled in the East, another series of committee meetings in the West would seem desirable, especially in view of the splendid success that attended the group meeting which was held last March in Chicago.

Describes Building of Battledeck Floors

A technical bulletin describing battledeck-floor construction has just been issued by the American Institute of Steel Construction, 200 Madison avenue, New York. The battledeck-type floor is one made of steel plates welded to I-beams. To this bulletin giving complete engineering data on the construction are appended tables showing the allowable loads for web shear or flexure, whichever is least.

Some few experimental floors of this type have been installed during the past year and considerable publicity has been given them.

New Books Worth Reading

SCIENCE ECONOMICS BUSINESS

Steel Under Heat Stress

Creep of Steel at High Temperatures, by F. H. Norton; cloth, 90 pages; published by McGraw-Hill Book Co. Inc., New York, and supplied by IRON TRADE REVIEW for $3, plus 15 cents for postage, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 15s, net.

Investigation of the creep resistance of steels was undertaken at the request of the Babcock & Wilcox Co., to provide engineering data at the higher temperatures. The work was carried on in the department of physics at the Massachusetts Institute of Technology. Previous determinations were so widely varied that necessity was seen for more exact values to guide the engineer in designs for high temperature equipment.

Details of the problem and its solution, with description of the testing devices, give an insight into what was sought and what has been accomplished up to this time. Descriptions of the steels tested are accompanied by numerous microphotographs showing the structure of the metal.

Results were not sufficiently definite to serve as stable bases for design and further tests over longer periods are asked, to determine close values.

* * *

Monumental Furnace Work

Blast Furnace Practice, Volumes I and II, by Fred Clements; cloth, 538 and 509 pages respectively, 8 x 10 inches; published by Ernest Benn Ltd., London; supplied by IRON TRADE REVIEW for $17, each, plus 15 cents for postage, and in England by Penton Publishing Co. Ltd., Caxton House, London, for 63s, net, each.

The author, who is general manager, Park Gate Iron & Steel Co. Ltd., Rotherham, England, in presenting his comprehensive work, has kept in mind the iron and steelmaker's need for knowledge of modern developments in blast furnace practice. Many authorities on iron and steel practice in various countries have supplied information to the end that the work is cosmopolitan in character.

Latest developments in each phase of the industry are indicated clearly and great pains have been taken to illustrate the books with all the photographs, maps, plans, diagrams, tables and working schedules that seem necessary to assist the blast furnace engineer, designer and operator as well as the student who may be intending to specialize in this sphere of work.

The first volume deals with the source, preparation and handling of raw materials used in the blast furnace. The author discusses in detail the metallurgical properties of pig iron; chemical, thermal and physical principles; distribution, mining and preparation of iron ores; fluxes; coke; blast; and, materials handling. Illustrations used in this volume total 375. Sixty-seven tables also are included. Furnace lines and burdens in 14 countries are compared on charts contained in a pocket at the end of the book.

Design of plant and equipment is discussed in Volume II. No pains have been spared in making this treatise complete. The 12 chapters include 431 photographs, plans and diagrams and 21 tables. Information presented covers the design of the hearth, bosh and stack; refractory linings; distribution of materials; hoisting equipment; gas cleaning systems; blast distribution; hot blast stoves; handling iron and slag; and, auxiliary machinery and indicating instruments.

* * *

American Steel in 1928

Annual Statistical Report of American Iron and Steel Institute for 1928, cloth, 119 pages, 6 x 9 inches; published by the American Iron and Steel institute, and supplied by IRON TRADE REVIEW for $5, plus 15 cents for postage, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25s, net.

Full and complete statistics of the iron and steel industry of the United States and Canada for 1928 and prior years are included in this annual publication. It also carries foreign statistics for leading countries on iron ore, pig iron, and ferroalloys, steel ingots and castings from 1900 to 1928, as far as available. An analysis of tonnage of iron and steel products exported for 1924 to 1928, inclusive, also is given.

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How To Do Welding

Oxy-Acetylene Welder's Handbook, by M. S. Hendricks; 208 pages, 4 x 6½ inches; cloth; published by Acetylene Journal Publishing Co., and supplied by IRON TRADE REVIEW for $3, plus 15 cents for postage, and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 15s, net.

The worker will find in this convenient pocket volume a working manual of instructions for oxyacetylene welders, covering fundamentals in clear and helpful way. Important operating factors are discussed principally from the standpoint of welding on steel, since this is most commonly welded. Technique for welding other metals also is presented, most of which has been developed in recent years. Special fields, such as pipe, tank and aircraft welding are also covered. Training of operators and inspection and testing of welds are included to round out the volume.

* * *

Bibliography of Engineering

Engineering Index for 1928, in two volumes; cloth; 2000 pages; published by the American Society of Mechanical Engineers, New York, and supplied by IRON TRADE REVIEW for $125.

In these volumes are collected the reference items mailed daily to subscribers at an annual cost of $2000 each. They constitute an encyclopedic bibliography of periodical engineering literature with an author index. The index has been in existence for 45 years as a recognized means of keeping in touch with periodical technical literature, bringing to engineers a full view of the entire field, giving opportunity of keeping abreast of the latest thought in every department.

More Permanent Management Is Obtained Through Mergers

American Management Association Finds That Human Elements Making Up Consolidations Must Be Considered as Well as Operating Economies

MERGERS and consolidations; fashions, style and art in business; compensation of executives; research activities of companies; pensions; employe training; executive training programs; standardizing, measuring and compensating for office work; and branch office management were general subjects which came in for a generous share of discussion and probing at the autumn convention of the American Management association, held at Hotel Statler, Detroit, Oct. 29-Nov. 1. Approximately 300 were registered for the various sessions. A banquet was the feature of Tuesday evening; several speakers presenting addresses at that time. At an informal luncheon on Thursday noon, a representative of the Union Trust Co., Detroit, spoke concerning the stock market, a subject which was particularly timely.

A fashion, style and art exhibit was set up in the convention hall, a number of companies displaying novel packaging ideas and selling displays. W. J. Donald, managing director of the association, announced that the next meeting of the association probably would be held in Chicago some time in February.

Human Element Is Key to Successful Mergers

COMING hard on the heels of the second great stock market "debacle," the convention was productive of opinion that possibly when stock quotations are adjusted reasonably in line with earnings, the attention of industrial executives again will be turned to serious problems of managing and controlling their businesses. At the opening meeting on Tuesday morning, the general topic was mergers and consolidations. John C. Orcutt, vice president, Irving Trust Co., New York, presiding, introduced O. W. Visscher, editor, *Business Bulletin*, LaSalle Extension university, who spoke on "Conditions that Bring About Mergers."

Mr. Visscher pointed out that the country is experiencing the greatest merger movement in its history and that in 1927 only two thirds of the total number of industries established in this country in 1914 remained, this being due almost entirely to consolidations. Public opinion of mergers is changing. A former fear of unified and far-reaching businesses has changed to a pride in their very bigness. Political opposition to mergers has been reduced. Outstanding scientific developments and standardized machinery have created actually a smaller world with more interchangeable goods, both incentives to consolidations. The technique and science of management has trained business executives to the scientific viewpoint of long term good in industry and not immediate profits. Mergers offer certain advantages to business, Mr. Visscher stated, among which are the hope of lessening competition, reducing selling expenses, more effective advertising, large-scale buying, etc.

But the determining factor of a merger is the human factor, according to the speaker. He maintained that "mergers are largely a matter of human values—emphasizing the value of strong management. A better rounded and more permanent management is obtainable by merging.

Disadvantages Often Present

Contrasting with the advantages, Mr. Visscher enumerated certain disadvantages resulting from mergers. Loss of incentive for promotion to valuable men in the organization, dissatisfaction, improper functioning of new associates due to lack of cooperative attitude, and the lack of men capable of handling the new executive positions which a merger creates, were a few of the stumbling blocks which he mentioned, stating in conclusion that "big business will never lack the stimulus which the competition of aggressive new businesses provides."

In the discussion which followed Mr. Visscher's paper, the question was brought up as to what effect the speculative efforts of the last few years have had on mergers and consolidations. Mr. Orcutt voiced the opinion that this effect was relatively small.

Applying to the merger question the revised idea that the proof of the pudding is not alone in the eating but also in the digesting, A. D. Berning, resident partner, Ernst & Ernst, New York, contended that the proof of the merger is in the operation and not in the forming. His paper was entitled, "Factors To Consider in Working out Mergers." Working capital, geographical location, plant capacities, trademarks, goodwill, etc., are some of the factors which must be studied thoroughly, according to Mr. Berning, but the human elements making up the merger must be given the most careful consideration. Proceeding further, the speaker outlined five points which enter into the advisability of merging businesses. Economic and legal soundness, with regard to the tax situation and also antitrust legislation; management, sounding the need for co-ordinated leadership and the development of new ideas and ideals; financing of sufficient amplitude to meet the demands of the business and a normal expansion; favorable earn-

ing powers of the merger constituents; and a just and acceptable plan or formula for the merger with a full and frank discussion of the complete negotiations.

W. E. Harris, United Fruit Co., Boston, spoke briefly following Mr. Berning's paper, emphatically stating that the need of American industry today was not for new large combinations of production but a keener and more thorough search for new markets to relieve the burden of overproduction which is weighing down nearly every industry today. Mr. Berning replied that he was heartily in accord with Mr. Harris' sentiments but that he considered mergers were a definite step toward the attempt to discover new markets through more concentrated research and advertising, made possible through increased working capital.

Discuss Bonus Systems

Compensation of executives with reference to extra-salary remunerations and profit sharing was discussed at the Wednesday afternoon session. John S. Keir, economist, Dennison Mfg. Co., Framingham, Mass., presided. The first speaker was S. R. Rectanus, American Rolling Mill Co., Middletown, O., who presented an address, "Executive Bonuses in the American Rolling Mill Co.," describing the various bonus plans employed by this company since its start. Originally the company believed that all salaried employes should receive bonuses in proportion to their salaries. This idea has since been changed. In 1922, 900 salaried employes were compensated out of a fund set aside from the company earnings. This group included division heads, assistants, and department heads. Length of service was taken into consideration, 1 per cent extra being awarded for each ten years of service.

From 1922 until 1928 was a comparatively lean period for the company but in 1928, out of 1500 salaried employes, 200 received shares in a bonus sum of $200,000. The American company found that the bulk of employes were not interested particularly in the earnings of the company and hence awarded extra compensation only to executives who carried the responsibility for the earnings. The general purpose of the wage incentive plan is to apply a form of wage incentive which will help business for the company.

C. E. Jackson, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., inquired whether the money distributed was net profit of the company or accruing from economies in plant operation. Mr. Rectanus replied that the sum was net profit on operations for the year disregarding any effect produced by altered values of securities or other finances.

Managerial profit sharing in the organization of the White Sewing Machine Co., Cleveland, was explained by A. S. Rodgers, president of that company. The plan is not actually profit sharing in nature, but rather an arrangement for rewarding employes in administrative, sales and production departments for performance of duty over certain standards which the company has determined.

Outlines Similar Plan

T. H. Dillon, United Fruit Co., Boston, spoke extemporaneously concerning the management bonus plan which his company maintains whereby all executives above managers share equally in proportion to their salary in a certain fund set aside from the company earnings. W. H. Baker, Cuba Co., New York, summed up the situation in an illuminating and convincing manner, saying it all came down to two viewpoints of the company concerned; one, which he maintained essentially selfish, the company rewarding worthy employes with a view to receiving more effort and hence more final profit; the other rewarding all employes without regard to their ability or the effect which such incentive might have.

Employe Pension Plans Winning Approval

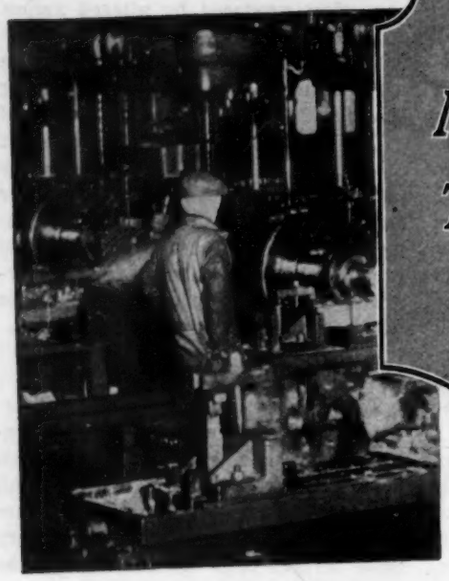
THE subject for discussion at the Thursday morning session was pensions. C. S. Ching, director of industrial and public relations, United States Rubber Co., New York, presided and introduced as the first speaker M. B. Folsom, assistant to the chairman, Eastman Kodak Co., Rochester, N. Y., whose address was titled, "The Pension, Retirement and Benefit Plan of Eastman Kodak Co." To provide for employes, the Eastman company is setting aside $6,500,000, two thirds of which already has been paid, the remainder to be paid either next year or the payments spread out over a period of years. This money is turned over to an insurance company and cannot be withdrawn except to turn it over to another insurance company should the occasion demand it. From the returns of this money the insurance company makes certain benefits to employes of the company including a wage dividend of 10 per cent of a worker's salary if he has seen five years' service, a weekly salary of $26.50 in case of sickness, life insurance and a year's salary in case of death, and also certain remuneration after retirement. The employe pays nothing. Under present conditions older employes are taken care of primarily and such other employes down to a certain age limit as funds will permit. When the full principal is paid in all employes of ten years service or over will be covered by this novel pension plan. Several written discussions of Mr. Folsom's paper were read, all commending the idea.

Executive Training Advocated

"Training Executives to Train," was the paper presented at the afternoon session by Morse Dell Plain, vice president, Northern Indiana Public Service Co., T. H. Dillon, United Fruit Co., presided. Mr. Dell Plain explained the problem of employe training which confronted his company, operating a business in which contact with the customers was through the rank and file of workers and not through executives. To train workers properly it was found necessary to train the executives to train the workers. Business research consultants were called in and devised a training course which all executives of the company attended.

The course went back to the fundamentals of management and labor and was presented to executives in monthly meetings conducted by the vice president in charge of operations. The executives in turn conducted training courses for their employes. These courses consisted of from 40 to 50 meetings of one hour duration. Twelve employes constituted each group and each was required to take an active part in discussion of the various problems. The company has been pleased with results of the courses, but still is seeking to put training methods on a sounder basis and is planning more extensive training courses for the future.

Walter S. Berry, director of training, Scovill Mfg. Co., Waterbury, Conn., presented a discussion of Mr. Dell Plain's paper and commended it as one of the best applications of both practical and theoretical management principles he had read.



New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Installment Sales Meet Disfavor

SELLING machine tools on the installment basis in general meets the disfavor of member companies of the National Machine Tool Builders association. The association recently distributed to its members a bulletin requesting opinions on the subject of the installment or time system of sales and whether the subject was considered worthy of discussion at some future meeting of the association.

Few commodities are sold today that cannot be purchased on a deferred payment plan. The business of financing these payments is a large and profitable one and one which furnishes a livlihood to a large corps of workers. Machine tools in a number of cases are sold through dealers and builders whose output goes directly to dealers naturally are reluctant to adopt or consider a plan of time sales. As one of these companies puts it:

Matter Left to Dealers

"As one of the concerns selling through dealers exclusively in this country, we would not be much interested in the subject of installment sales as far as this country is concerned. Our dealers are of the type who are demanding terms of net 30 days. In some cases there might be a slight modification, but this is a matter which is entirely up to our dealers."

The current high rate of machine tool buying on the present cash basis would seem to make unnecessary any attempt to introduce the installment system. Pursuing this line of thought a certain company replied to the question as follows:

"While the subject of installment sales might be worthwhile for advance consideration, yet I believe the time has not arrived when many of our machine tool manufacturers will be interested. In other words, business on a cash basis is too good now, and we all have more orders than we can take care of without fussing with

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Gear generator	Roughs and finishes straight bevel gears	Gleason Works	222	Oct. 17	981
Universal machine	Performs seven separate machining operations	Simplex Mfg. Co.	223	Oct. 17	982
Combination machine	For burring, crimping, beading, etc. work on sheet metal	Niagara Machine & Tool Works	224	Oct. 17	982
Milling machine	Knee and column type; front and rear controls	Cincinnati Milling Machine Co.	225	Oct. 17	983
Oil purifier	Portable centrifuge and filter press, mounted on truck	Westinghouse Electric & Mfg. Co.	226	Oct. 17	983
Hydraulic operator	Control device giving smooth upward thrust	General Electric Co.	227	Oct. 17	983
Crawler unit	¾-yard capacity; gasoline driven	Thew Shovel Co.	228	Oct. 17	984
Bearing	Self-sealed and self-lubricated ball bearing	New Departure Mfg. Co.	229	Oct. 17	984
Milling machine	Bed-type; automatically-operated, hydraulic feeds	Oesterlein Machine Co.	230	Oct. 24	1044
Rougher	Four-spindle manufacturing type; for straight bevel gears	Gleason Works	231	Oct. 24	1045
Regulator	Two-stage pressure regulator for oxygen tanks	Oxweld Acetylene Co.	232	Oct. 24	1045
Hobbing machine	Production-type for roughing and finishing spur gears	Barber-Colman Co.	233	Oct. 24	1046
Arc welder	300-ampere generator powered by 6-cylinder engine	General Electric Co.	234	Oct. 24	1046
Arc welder	Gasoline or electric drive; 300-ampere generator	Westinghouse Electric & Mfg. Co.	235	Oct. 31	1114
Starter	Across-the-line enclosed starter for direct-current motors	Cutler-Hammer Inc.	236	Oct. 31	1114
Meter	Indicates pressure between welding electrodes; hydraulic	Gibb Welding Machines Co.	237	Oct. 31	1115
Hoist	Differential chain hoist; aluminum finish	Robbins & Myers Inc.	238	Oct. 31	1115
Drill	High-speed type, sliding head; bench and pedestal models	Buffalo Forge Co.	239	Oct. 31	1115
Grinder	Portable pneumatic; rotary air motor drive	Chicago Pneumatic Tool Co.	240	Oct. 31	1115
Lathes	Selective-type headstocks; 14 and 16-inch sizes	Boye & Emmes Machine Tool Co.	241	Oct. 31	1116
Grinders	Electric; 7-inch flexible disk and 7-inch bench types	Van Dorn Electric Tool Co.	242	Oct. 31	1116
Hacksaw	Also attachment to accommodate broken blades	Forsberg Mfg. Co.	243	Oct. 31	1116
Drill	Rotary pneumatic; 1½-inch drilling capacity	Independent Pneumatic Drill Co.	244	Oct. 31	1116
Lathe	Production type; equipped for high-speed operation	Cincinnati Lathe & Tool Co.	245	Nov. 7	1185
Grinders	Heavy-duty electric; 5, 7½ and 10-horsepower capacities	Hammond Machinery Builders Inc.	246	Nov. 7	1185

deferred terms or installment sales."

"Leave well enough alone," says one manufacturer, continuing, "Some manufacturers have their own offices and sell direct to the consumers, and several of them give extended payments and we think many of them encourage it, which we believe is a decided mistake. It is not necessary to sell machinery on long time, thus making yourself a banker. We have banks for the purpose of loaning money. The country is in a prosperous condition, and usually it is the small fellow that asks for the extended payments, but we don't see nearly so much of it as we did some years ago, so why encourage it. Buyers usually are generally satisfied with the short terms we have today, so why should we encourage long-time payments which call for notes, lease contracts, frequently taking back of machines unpaid for, which means a lot of bother and makes work?"

Furnishes Buying Stimulus

The time payment plan is seen by some as a needed stimulus in dull buying seasons. A clear statement of the manner in which one company handles deferred payment accounts and some of the details of the selling plan is as follows:

"It seems to us that terms might be varied according to conditions prevailing, which might warrant discouraging or stimulating this kind of business.

"Under present conditions, when more business is being offered machine tool builders than they can handle, we are accepting no less than 33 1/3 per cent as the initial payment prior to shipment and the deferred, monthly, equal payments are not permitted to extend over more than six months, the title remaining in our name until fully paid for and our interest to be protected in the meantime by insurance carried by the customer in our favor. The notes bear interest at the rate of 6 per cent. Furthermore, we have set a conservative limit as to the total outstanding of these deferred payments, which we will not exceed at any one time.

"As a matter of fact, every such conditional contract sale under present delivery conditions makes the delivery that much longer for some well established customer and some of these machines may come into the second-hand market at a time when they will interfere with the sale of new machines when such orders are scarce, for the reason that concerns requiring extended terms in times when business is good probably are extending themselves too far for safety, so that a slump will be disastrous to them.

"On the other hand, when business is dull, it can be stimulated somewhat by inducing certain comparatively small but sound concerns to prepare for the next period of good business and put themselves in position to get business in the meantime which they might otherwise lose, by letting the machine pay for itself in part at least, out of its earnings during the period of deferred payments.

"While people seem willing to pay high interest or finance charges to buy articles catering to their personal comfort or pleasure (like household devices and automobiles), they do not stop to analyze such charges as a business man would in buying productive equipment for his manufacturing plant and unfortunately, machine tool sellers have established the precedent of financing conditional sale contracts at 6 per cent interest on the deferred payments, which doesn't cover the cost and it will be mighty difficult to put it on any other basis now.

"To summarize, it might be considered best to discourage such business in times when it is not needed and charge up the cost (over the nominal 6 per cent interest) to selling expense in times when business needs this stimulant."

Thus it appears that the machine tool industry is not ready as yet for installment plan sales, present market conditions not seeming to warrant anything new of this nature. Several replies were received expressing a desire to hear the subject of time paper discussed, but the general trend seems to be away from any changes in present financing methods.

Lathe Designed for High-Speed Cutting Tools

No. 245

Cincinnati Lathe & Tool Co., 3207 Disney street, Oakley, Cincinnati, recently has developed a new production lathe fully equipped to give best results with the new tungsten carbide cutting tools. A speed of 100 revolutions per minute or slightly higher is available. By operation of the lever on the headstock the spindle may be started or stopped instantly through a positive friction clutch and brake. The cone, however, continues in operation until stopped by the countershaft. The headstock is built strongly and is supplied with or without back gears. The spindle is provided with a 2⅜-inch hole throughout to machine bar stock; tapered roller bearings support the spindle. The tailstock permits a wide range of adjustments at different angles of the compound rest. Either a quick acting or standard screw feed arrangement is furnished. The feed box provides a wide range of feeds but may be replaced with a quick change device for screw cutting. A plain rest is standard equipment but any of the standard rests or turret attachments can be applied. Other standard equipment includes double plate apron, bush with two centers, self-oiling two-speed countershaft, automatic stop, screw-operated tailstock, and large and small face plates.

Complete Equipment on Electric Grinders

No. 246

Hammond Machinery Builders Inc., Kalamazoo, Mich., is placing on the market a line of heavy-duty electric grinders in 5, 7½ and 10-horsepower capacities and furnished for 220, 440 and 550-volt, 2 or 3 phase, 25 40, 50 and 60-cycle alternating current; also 110, 220 and 550-volt direct current. The grinder is equipped with a totally enclosed motor, an air cleaner and four oversize ball bearings. An automatic motor starter, having thermal overload and low voltage protection, is standard equipment. Adjustable boiler-plate steel wheel guards and hinged doors, exhaust pipe connection, adjustable spark and chip breaker and eye shield are other standard accessories. Adjustable and removable tool rests also are provided.

Sells Plant To Employes

Henry Weis, founder of the Henry Weis Mfg. Co. Inc., fabricator of metal products, Elkhart, Ind., and his son, William M. Weis, have turned over to seven of the company's old and trusted employes the entire plant and business. The down payment as well as all subsequent payments are to be made out of the company's earnings. The plan to take such action long has been a dream of Mr. Weis. The agreement also provides that other employes who may hereafter become stockholders may participate in the purchase under conditions which have not yet been outlined fully. The Weis plant was moved to Elkhart from Atchinson, Kans., in 1926.

Approve Operating Plan

Bondholders of Stevens Walden-Worcester Inc., Worcester, Mass., have approved the plan by which the business of the company will be carried on by Stevens-Walden Inc., a new corporation. Homer W. Bleckley is president and treasurer and George W. Fleming vice president and director of sales. In addition to these officers directors are: Clarence C. Dodge, Frank J. Weschler, and Anton W. Schneider. The company will continue to sell under its trade name Walden-Worcester wrenches and Stevens tools and boxes.

Steel Founders' Society Prepares for Broadened Activities

Managing Director Submits Comprehensive Survey and Recommendation for Future Course at Meeting in Chicago—Program Wins Approval

GROUNDWORK for broadened activities in the steel foundry industry were laid at a meeting of the Steel Founders' Society of America in Chicago, Oct. 29. A registered attendance of 108 was representative of the country's oustanding foundry organizations. President J. E. McCauley, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., in his opening address stressed the care and preparation which attended a survey of the industry since its last previous meeting held at White Sulphur Springs, W. Va., June 27-28.

Granville P. Rogers, who was selected as managing director just prior to the previous meeting, presented a complete and comprehensive report, covering the results of this survey, his recommendations as to the future course of the society, a set of by-laws involving a reorganization and various data relating to membership, and association activities to be furthered. The reading of this report occupied the entire morning and a portion of the afternoon meeting, a luncheon being provided to break this long session.

Urges Co-operative Effort

At the luncheon meeting, a cummunication from C. F. Abbott, executive director, American Institute of Steel Construction, offered words of encouragement and advice to the industry, urging it to join in co-operative effort along merchandising lines under the guidance of Mr. Rogers. Roger L. Wensley, president, G. M. Bassford Co., industrial advertising councillors, New York, in delivering the principal address at the luncheon pointed the way to effective advertising as an aid to better business.

On completion of Mr. Roger's report at the afternoon session, his recommendations were adopted unanimously, as were also the by-laws which for purposes of representation on the board of directors divided the country geographically into four divisions. Officers were elected in accordance with the new by-laws, as follows:

President, J. E. McCauley, Birdsboro Foundry & Machine Co., Birdsboro, Pa.; vice president Eastern division, W. H. Worrilow, Lebanon Steel Foundry, Lebanon, Pa.; vice president Central Atlantic division, J. E. Galvin, Ohio Steel Foundry Co., Lima, O.; vice president Midwest-Southern division, Arthur Simonson, Falk Corp., Milwaukee, Wis.; vice president Mid-Continent division, E. H. Cornelius, Oklahoma Steel Casting Co., Tulsa, Okla.; directors Eastern division, three years, R. J. Doty, Reading Steel Casting Co., Reading, Pa.; two years, William Faison, Atantic Steel Castings Co., Chester, Pa.; one year, G. R. Casey, Treadwell Engineering Co., Easton, Pa.; directors Central Atlantic division, three years, H. J. Koch, Fort Pitt Steel Casting Co., Pittsburgh, Pa.; two years, Clarence W. Howatt, Pittsburgh Steel Foundry Corp., Pittsburgh, Pa.; one year, W. W. Powell, Mesta Machine Co., Pittsburgh, Pa.; directors Midwest-Southern division, three years, S. W. Utley, Detroit Steel Casting Co., Detroit; two years, J. T. Osler, Hubbard Steel Foundry Co., East Chicago, Ind.; one year, L. S. Peregoy, Sivyer Steel Casting Co., Milwaukee.

Directors of the Mid-Continent and Pacific Coast divisions were not selected at this time.

Survey Proves Interesting

Many interesting highlights were shown in the report by Mr. Rogers. He noted that the steel castings industry comprises about 340 foundries, with points of greatest concentration in the following districts: Pittsburgh, Milwaukee, Chicago, Cleveland and Ohio, Buffalo, Eastern Pennsylvania, Detroit and the Pacific Coast states. The estimated output of these foundries is about 2,000,000 net tons, while operations have been in the vicinity of 55 to 60 per cent. The annual sales value of the product is from $150,000,000 to $175,000,000 with an invested capital exceeding this figure. Exports of steel castings total about 8000 tons valued in excess of $2,000,000.

Expansion of present output is impossible, according to Mr. Rogers, without unusual group effort along the lines of better merchandising, research to improve products and the pioneering of new uses. He searched the field for existing abuses which are detrimental and classified them in order of their rank and importance as follows: Price cutting, ignorance of costs, pricing for volume production, granting unwarranted concessions, suspicions and non-co-operation, over capacity, selling by schedules and by the pound, poor merchandising, dumping and piracy of markets, inferior products and others grouped as miscellaneous.

Advises Advertising Campaign

Mr. Rogers recommended setting up both trade customs and trade practices, sound costs, intensive and enlightened group action and better public relations through advertising and publicity as the remedies for these conditions. Co-operative advertising was strongly urged by Mr. Rogers, stating:

"Added impetus is given by undertaking collectively an informative and constructive advertising campaign through the publicity department of the society, through industrial papers and by direct mail, to tell the world of progress made and new uses found for the product, and the ability of the steel foundry business to serve industry as a whole. The result of this work should be more satisfied customers and consequently better service to the public, greater prestige, acceptance and general use of steel castings, as well as new uses, all of which will provide a larger market for the individual foundry and the entire industry."

Enthusiasm in the acceptance of the plan was indicated by the expressed intention of many firms represented, but not members, to join in the work of the society as outlined.

Group meetings of the light and

heavy work divisions of the society were held immediately following the adjournment of the general session. An invitation luncheon to representatives of the technical, business and trade press was held Oct. 30, with Mr. Rogers presiding.

Industry Will Use More Foreign Iron Ore

(*Continued from Page* 1171)

intensive development of ranges other than the Mesabi and the greater use of beneficiation, there will be after 1950 a deficiency to be made up from other ores of the United States and from imports. This time is well within the period which has to be considered for the retirement of the huge plant investment of the iron and steel industry based on Lake Superior deposits, and particularly for any new capital investment now being made. It is not surprising, therefore, that the larger companies are already beginning to think seriously about the distribution of reserves needed beyond that time. Particularly does this apply to the Chicago district.

Low Grade Ores Substitute

The lessening of Lake Superior production will doubtless favor larger production of the low grade ore of the Alabama region. This ore is mainly oolitic hematite containing up to 33 per cent iron, with phosphorus a little high for the basic open-hearth furnace and not high enough for the basic bessemer process. The district now furnishes about 12 per cent of the annual tonnage, 8 per cent in terms of metallic iron, but the reserves are large enough to take care of increased production for an indefinitely long period. The proximity of coal and limestone has made it possible to use this ore, notwithstanding its inferior grade. The Alabama district is the only place in the United States, outside of the Lake Superior region, which is known to contain ore in such volume that its extensive use throughout the next century can be anticipated.

Somewhat increased production can be expected from the miscellaneous ore supplies in the northeastern states, now supplying 1½ per cent of the total, but reserves are limited and require beneficiation to make them available, with the result that market conditions would have to be most favorable to bring this production up to any considerable fraction of the demands of the United States.

It does not appear probable that domestic readjustments will be adequate to meet the future requirements of the United States, except at much increased cost. This suggests that there will be larger imports of foreign ores, which at present amount to less than 4 per cent of the consumption.

Tariff will doubtless play a part in determining the rate at which imports will increase. With a sufficiently high tariff, the United States could use much of its own low grade materials but at increased cost of finished products. Maintenance or increase in iron and steel exports will involve the necessity of keeping prices of products down to a basis of world competition, and thus will limit the amount which can be paid for the raw materials. This consideration may hold the tariff down to moderate limits, to allow the United States to utilize high grade foreign ores. It is easy to predict that the tariff question may cause stormy battles between local producers, on the one hand, and manufacturers who want cheap foreign ore, on the other. The issue will be complicated by the ownership of the large domestic ore deposits by the principal iron and steel companies.

What, then, are the foreign sources of supply which the United States may draw on? The reserves of lateritic ore in Cuba are so large and near that it is safe to assume a considerable expansion of importation from this source, notwithstanding the necessity of overcoming certain metallurgical difficulties in their use. Ore is now being mined in Chile and brought to the United States by an American company at the rate of about a million tons a year, but it seems unlikely that this movement can be maintained long on a much larger scale than that at present.

The reserves of Brazil are by all odds the largest and of best grade tributary to the North Atlantic basin. The distance is great, the capital charge necessary for development and transportation is high, but cost of delivery to the United States per unit of iron is estimated at a figure which will put these ores on a competing basis with other foreign ores. Steps are already under way to start importation from this source.

Other Sources Available

Iron ores are known in Venezuela and in other parts of South America and in Central America, which in time may become sources for United States importation, but as yet neither quantity nor availability has been proved. Exploration is far from complete in the Caribbean region. In Mexico iron ore is known of the type so common in the western United States, isolated deposits of magnetite which are capable of local development but which are not likely to furnish the basis for a large export trade, both because of their size and geographic location.

Newfoundland has large reserves of high phosphorus ore well located for import into the United States. The limiting factor in the use of this ore is the high phosphorus content, requiring the basic bessemer process, and hence a radical change in American steelmaking practice, involving a large additional capital investment. There seems to be little likelihood of Newfoundland ore becoming an important factor in the United States industry in the near future, though ultimately the proximity of this extensive reserve may lead to some use of the ore in the eastern United States.

Canada does not have enough iron ore for its own use, and in spite of its vast area and the variety of its mineral deposits, there seems to be little prospect of developing iron ores sufficient to warrant much exportation to the United States. Small amounts of iron are imported from Sweden and North Africa, but little increase can be looked for from these sources because of definite limits to their output and the increasing European demand for these ores.

Steel Center Will Move

Partial transfer of the steel industry toward the coasts, particularly the east coast, seems a likely consequence of the decline of Lake Superior production. The far west is likely always to take a secondary position by virtue of the small size of available ore reserves and because of its geographic relations to centers of the consuming population. The East has the population and demand, has already a considerable nucleus of iron and steel plants, has important ore reserves in Alabama, Pennsylvania and New York to draw on, is well situated for the export market, and particularly can benefit by the importation of ores from whatever sources exist tributary to the Atlantic basin. One of the interesting questions now receiving attention is the probable effect of the proposed deep waterways of the St. Lawrence and Mississippi rivers on the maintenance of interior plants. Both would function to some extent to give interior plants access to foreign ores, but only enthusiastic advocates can yet see in these channels any adequate offset to the coast advantages above outlined.

One of the obvious consequences of this shift in sources of iron ore will be the adaptation of smelting methods to the kinds of ore available. The larger part of the American industry has been built up on Lake Superior hematite of standard, high grade,

available both for bessemer and basic open-hearth practice. Only coast plants, like Bethlehem, have used any considerable variety of grades, due to the fact that their location has brought about the use of miscellaneous imported ores. For the future, the American industries must be prepared to use larger quantities of the low grade, fairly high phosphorus ore of the Alabama region, in addition to the very high phosphorus ore of Newfoundland, the chrome-nickel-alumina bearing ore of Cuba, and the high grade, low phosphorus hematite available from Brazil. The future will see adaptations which will bring the United States from its position of advantage due to the abundant high grade Lake Superior ores down toward the raw material basis of its competitors.

There remains to be considered the rate at which the changes above outlined will materialize. There is nothing to indicate any considerable changes in the present ore producing situation until the Mesabi range passes its peak, about 1950, though the beginnings will doubtless be made. Continuance of high taxes in Minnesota will tend to hasten the change. From then on, the rate should be accelerated, and by the end of the century the principal dependence of the United States is likely to be on its southeasten ores and on imports.

Announces Program for Acetylene Meeting

A long list of technical papers has been arranged for the thirtieth convention of the International Acetylene association at the Congress hotel, Chicago, Nov. 12-15. Special sessions will be devoted to aircraft welding, testing, structural steel welding and pipe welding. The annual dinner will be served on Friday evening. The detailed program for the meeting is as follows:

Wednesday, Nov. 13

MORNING

Address of president by L. F. Loutrel, Shawinigan Products Corp., New York.
Report of secretary-treasurer by A. C. Morrison, New York.
Keynote address, by Bennett Chappel, vice president, American Rolling Mill Co., Middletown, O.
Committee reports.

AFTERNOON

Aircraft Session

Address by E. P. Warner, editor of *Aviation*, New York.
"Oxyacetylene Welding as Applied to Aircraft Construction," by J. B. Johnson, chief, material branch, war department, Wright Field, Dayton, O.
"Training of Welder Mechanics by the Universal Air Lines," by Paul D. Paine, supervisor of ground schools, St. Louis.
"Gas Welding in the Aircraft Industry," by Charles E. Kirkbride Jr., assistant chief draftsman, Naval Aircraft Factory, Philadelphia.
"Two Fundamentals of Aircraft Welding," by Kendal Perkins, Curtiss-Robertson Aircraft Co., St. Louis.
"Aircraft Welding Including the Development of an Efficient Welding Department," by Russell F. Hardy, chief engineer, Waco Aircraft Co., Troy, O.

Thursday, Nov. 14

MORNING

Testing Session

"Present Attitude of Authorities Toward the Welding of Boilers, Pressure Vessels and Steam Lines," by C. W. Obert, secretary, boiler code committee, American Society of Mechanical Engineers.
"Destructive and Nondestructive Tests of Welds: A Critical Discussion of Methods of Testing and the Significance of the Results," by J. R. Dawson and A. B. Kinzel, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y.
"Recent Uses of the Oxyacetylene Process in the Chemical Industry," by R. C. Hosterman, Carbide & Carbon Chemicals Corp., South Charleston, W. Va.
"Oxyacetylene Welding of Copper," by W. R. Hibbard, Technical department, American Brass Co., Waterbury, Conn.

AFTERNOON

Structural Steel Session

"Gas Welding and Cutting in Structural Steel," by H. H. Moss, development engineer, Linde Air Products Co., New York.
"Design and Fabrication of Oxyacetylene Welded Buildings," by H. M. Priest, assistant engineer, American Bridge Co., New York.
"Erection of Steel Structure by Welding," by George C. Holcombe, steel erecting engineer, Forestville, N. Y.
Motion pictures—"Oxyacetylene Welding of Structural Steel."

Friday, Nov. 15

MORNING

Welded Piping Session

"Welded Steam Piping," by Webster Talmadge, president, Webster Talmadge & Co., New York.
"Oxyacetylene Welding in Domestic Heating Installations," by A. A. Kleim, Velodrome Heating Co., Brooklyn, N. Y.
"Tube Turns," by R. E. Fritsch, Girdler Corp., Louisville, Ky.
"Safeguarding Welding and Cutting Operations," by H. E. Newell, engineer, National Board of Fire Underwriters, New York.
"Recent Fire Losses Attributable to the Careless Use of the Blowpipe," by R. E. Manning, Associated Factory Mutual Fire Insurance Companies, Boston.

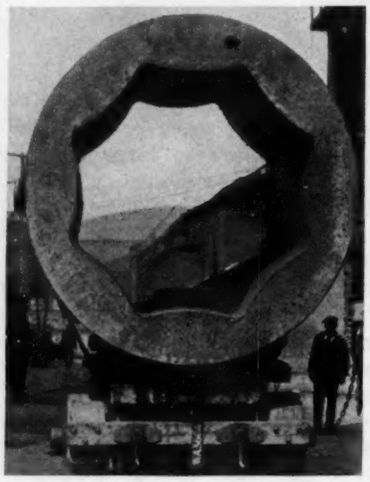
AFTERNOON

"Use of Automatic Cutting Machines," by Otto Voss, Allis-Chalmers Mfg. Co., Milwaukee.
"A Discussion of Safe Practice in Acetylene Pipeline Installations," by H. J. Grow, research engineer, Air Reduction Sales Co., New York.
"Oxyacetylene Welding in the Manufacture of Pumps," by T. I. S. Boak and Paul Ulmer, Goulds Pumps Inc., Seneca Falls, N. Y.
Committee reports.
Election of officers.

EVENING

Annual dinner.

Ingot Mold Casting Weighs 105 Tons



THE large tapered ingot mold casting shown in the illustration above, weighs approximately 105 tons and was supplied recently by the Brightside Foundry & Engineering Co. Ltd., Sheffield, England, to the River Don works of the English Steel Corp. Ltd., Sheffield. It was cast by means of a series of stand and tilting ladles, and cooled in the sand mold for four weeks. This ingot mold is the largest of its kind which the English Steel corporation has employed and is to be used in casting ingots weighing up to 160 tons for boiler drums. Transportation of the casting was difficult because of its great weight and bulk, but with the aid of five tractors it was transferred from the foundry to the works of the English Steel corporation in a comparatively short time.

Conference on Electric Heating and Welding

Pennsylvania State college and the Association of Iron and Steel Electrical Engineers are co-operating in an electric heating and welding conference to be held at the William Penn hotel, Pittsburgh, Nov. 13-14. Technical sessions will be held on the mornings and afternoons of both days and for these sessions an imposing list of papers and discussions has been arranged.

The technical program of the meeting is announced as follows:

Wednesday, Nov. 13

MORNING

"Some Recent Developments in Arc Welding," by K. L. Hansen, Northwestern Mfg. Co., Milwaukee.
"Tangible Advantages of Electric Heating," by Wirt Scott, special engineer, Westinghouse Electric & Mfg. Co., Mansfield, O.

LUNCHEON

Address by Harry Restofski, West Penn Power Co., Pittsburgh.

AFTERNOON

"Electric Welding of Heavy Materials," by J. F. Lincoln, vice president, Lincoln Electric Co., Cleveland.
"The Electric Annealing Furnace," by James Kniveton, Ryan, Scully & Co., Philadelphia.

EVENING

Conference dinner.

Thursday, Nov. 14

MORNING

"Steelmaking Furnaces," by Frank W. Brooks, chief engineer, William Swindell & Bros., Pittsburgh.
"Electric Salt Bath Furnaces," by A. E. Bellis, president, Bellis Heat Treating Co., Branford, Conn.

LUNCHEON

Liquid air demonstration by Dr. H. M. Elsey, research department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AFTERNOON

"Electric Galvanizing," by R. M. Cherry, General Electric Co., Schenectady, N. Y.
"Use of Electricity in the Development of Tool Steels," by Owen K. Parmiter, metallurgical engineer, Firth-Sterling Steel Co., McKeesport, Pa.

Editorials

Market Break Heals Credit

SOME months hence it will be far easier than now to appraise the real causes and final significance of the recent historic collapse of stock market values. One thing is certain, however, and that is that the long perplexing credit situation has been solved at one fell stroke. This is proved by the staggering October decline of $2,440,000,000 in brokers' loans and the unexpected reduction of bank rates of the Bank of England and New York federal reserve bank.

This means lower interest rates, a better bond market and whatever stimulation to business may come from these developments. Among the probable eventual effects will be increased building construction and expanded buying by the railroads. Moreover, foreign borrowers long barred from this market by the stampede of funds into common stocks, may again enter, with resulting increased purchases of American goods. Further, the market break has brought a saner recognition of realities.

As to the adverse effects it may be said that few, if any great market declines have failed to have an aftermath of business recession. This year there is the further consideration of some reduction in actual or hoped for purchasing power on the part of speculators. On the other hand, the rush of many thousands of investors into the market when real bargains began to appear testified to the huge reservoir of undiminished investing power in the country as well as the vast unshaken faith in the future of business.

The market crash followed a long series of events leading inevitably toward that end. Europe was in the grip of a credit stringency caused partly by the draining away of funds to Wall Street and huge blocks of new issues and "rights" were being fed to the market here. Meanwhile, it was becoming evident that the automobile industry and a few others had overstepped themselves, with resulting adverse effect upon steel and other lines. In short, the public suddenly realized that it had greatly over-discounted the year's tremendous industrial prosperity. In its panic the market pendulum swung just as much too far the other way.

Actually the percentage of decline in average share quotations of about 45 per cent in a few weeks equals the most severe declines in history, covering periods of from 15 to 18 months. A major operation has been performed and perhaps the healing process is already under way. Industry is mending its ailing symptoms by curtailment of production and none of the elements of serious or extended reaction exists. On the whole, the stock market break has been constructive in that it has jolted financial and business psychology back to realities. Moreover, it has helped to clarify the world credit situation and thus cleared the decks for recovery of business in 1930 from the present moderate decline.

New Setting Invites Tariff Delay

SIX months ago, almost to the day, the ways and means committee of the house of representatives of Washington introduced the bill revising the tariff. Rather prompt action in the house has been followed by procrastination and opposition in the senate. Although all hopes for the measure were abandoned last week, a coalition of Republicans, Democrats and Progressives has now undertaken to pass the bill and get to conference with the house by mid-December. However, it is unlikely that a revision of the present tariff will become law in the immediate future.

Meanwhile, the industrial section of the nation has changed. When the bill was introduced in the house industry was ebullient and on its way to record heights. Now it has passed the peak for 1929, and some dark forecasts have been made following the crash in Wall Street. No one seriously believes business will go to smash, but a spirit of conservatism is inevitable. To what extent this will affect the import situation remains to be seen. At best, any tariff bill passed at this time would be an unsatisfactory compromise. It might be advisable, in view of the changing condition, to defer action.

Dependent on Foreign Iron Ore?

PROF. C. K. LEITH'S statement to the World Engineering congress in Tokio pertaining to the Lake Superior iron ore reserves and summarized in this issue will not come as a surprise to those engaged in the industry. They have anticipated that the supply of good merchantable grades will reach the peak in about 1950, and thereafter consumers will have to depend on beneficiated ore and on the deposits in

the southeastern part of the United States and in South America.

Geologists will not venture a surmise as to how long the reserves of low-grade iron ore and ore bearing formations in the Lake Superior district will make it possible for the steel industry to exist as it is now constituted. Professor Leith, of the University of Wisconsin, estimates that the definite turning point will come by the end of the present century, and then the industry will have to place its chief dependence on the Southeast and South America.

The change will come gradually and not as a dislocating shock to the industry or the nation. The manufacture of iron and steel will be adapted to new conditions. One mine in the Lake Superior district today ships as much iron ore in a season as all the mines in the country produced in all the years prior to the Civil war. But we do not concern ourselves about the worries or difficulties of that earlier period. Geologists may speculate indefinitely, and interestingly, on how possession of iron ore will affect the race and nations. Transportation is annihilating distance, and it may be as practical in the future to haul iron ore 5000 miles, as it is now being done on a small scale, or even greater distances.

Geologists necessarily are vague and they do not agree as to the probable reserves of iron ore hidden deep in certain districts of the Lake Superior region, and the extent of low-grade surface deposits, and as to how available such supplies may be in the future. Professor Leith does not mention tonnages, either in terms of ore or iron, in referring to them, though he is one of the foremost authorities on the subject, and his general opinion probably will be accepted.

His thought on how possession of minerals must be considered in the nature of a trust to be administered for the welfare of all the people of the world is beautifully expressed, but plain matter-of-fact commercial aspirations likely will live for many years, and if the people of the world ever unite on this point it will be because it is good business to do so.

Track Material To Flow Evenly

MANY of the makers of accessory track tonnage, including frogs, switches and miscellaneous rail equipment, feel assured of greater convenience in getting out orders for track laying time next spring, since the railroads this year have advanced their buying periods for 1930 rails by three or four months. Heretofore, many of these producers have been placed under heavy pressure by the rush character of railroad orders in the late winter and early spring.

Within another 30 days, it is indicated, all the major rail purchases for next year's track laying will be booked, although rolling of much of this tonnage will not get under way until after the first of the year. Thus, something definite is being ascertained now as to the volume of new track tonnage to be purchased for 1930 laying programs. That the rail and accessory purchases for next season will amount to a gain of 10 to 12 per cent over the 1929 programs seems assured.

Operations of rail mills at various rolling points, which have held to last year's levels or below, will be stepped up soon to take care of the portions of the recent orders to be needed during the autumn months. The fact that the roads have yielded to the urgings of the rail mills and accessory producers for earlier schedules of track needs indicates that a more even flow of shipments, spread over more convenient periods for the sellers of track material, is possible.

Mechanization and Unemployment

THAT workmen are being forced out of employment through the mechanization of industry is the charge frequently hurled at American manufacturers. Labor leaders declare bitterly that the rapid adaptation of machinery to manual tasks is heading the country toward economic disaster. In the metal trades, however, such a criticism is unjust, according to Richard H. Lansburgh, professor of industry, University of Pennsylvania, a conclusion reached after a study of the machine age. Industry is not looking down but up.

Prof. Lansburgh told members of the Society of Industrial Engineers recently that skilled men are not being eliminated but skills are changing. Ordinary production jobs which formerly required men of long apprenticeship are handled by semiskilled or unskilled men, in the former meaning of the term, but new skills in machine handling and adaptation of men have risen. The demand for fully skilled metalworking mechanics naturally never has been so large, and the supply has been totally inadequate to meet needs because of the lull occurring in apprenticeship years ago.

This lull now has passed, said Prof. Lansburgh, creating an ideal situation for good personnel practice in which the personnel man may become a most valuable executive in his organization. If he grasps the full significance of these basic industrial trends, this officer is in a position to make happy contented workers and useful citizens of the type of labor being elevated to the tending of machines. It is in his power to develop programs to provide the skill needed in his industry, and to develop fundamental programs to provide steady work for expensive machines and high-wage mechanics of today.

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E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*

Noted Geologist Writes on Future of This Country's Iron Ore Supplies. Page 1171

"Steel Angles from Chicago"

STEEL Angles from Chicago," a new feature to be published once a month in IRON TRADE REVIEW, *makes its first appearance in this issue, Page* 1215. *In addition to the regular weekly market and news reports and the technical articles from the Middle West there are many interesting sidelights on the iron and steel industry which will be grouped under this title. "Mirrors of Motordom," a similar department pertaining to the motorcar industry in its relation to steel, inaugurated by* IRON TRADE REVIEW *two years ago, is one of the most widely read of this publication's features. Despite the growth in size of the steel industry and its broadening ramifications in this country, there is intense local pride in the centers where its large units are established. "Steel Angles from Chicago" will mirror the hopes and aspirations and general progress of the industry in the Chicago district.*

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The Business Trend

Large 1929 Profits Assured

By JOHN W. HILL, Financial Editor

DURING the recent period of stock market hysteria a number of important constructive developments took place, among which being the lowering of the bank rates of England and of New York, and the extra dividend declaration by the United States Steel Corp. The dividend announcement accompanied the corporation's report for third quarter, showing continuance of large-scale earnings.

THE balance of earnings for the corporation for the period was $51,575,350, compared with $58,825,843 in the preceding quarter and $29,886,259 in the third quarter of 1928. Earnings by months, as depicted on the accompanying graph, reveal that August was the high month of the quarter with a total of $24,687,078, against $18,597,178 in the corresponding month of one year ago. September brought some decline.

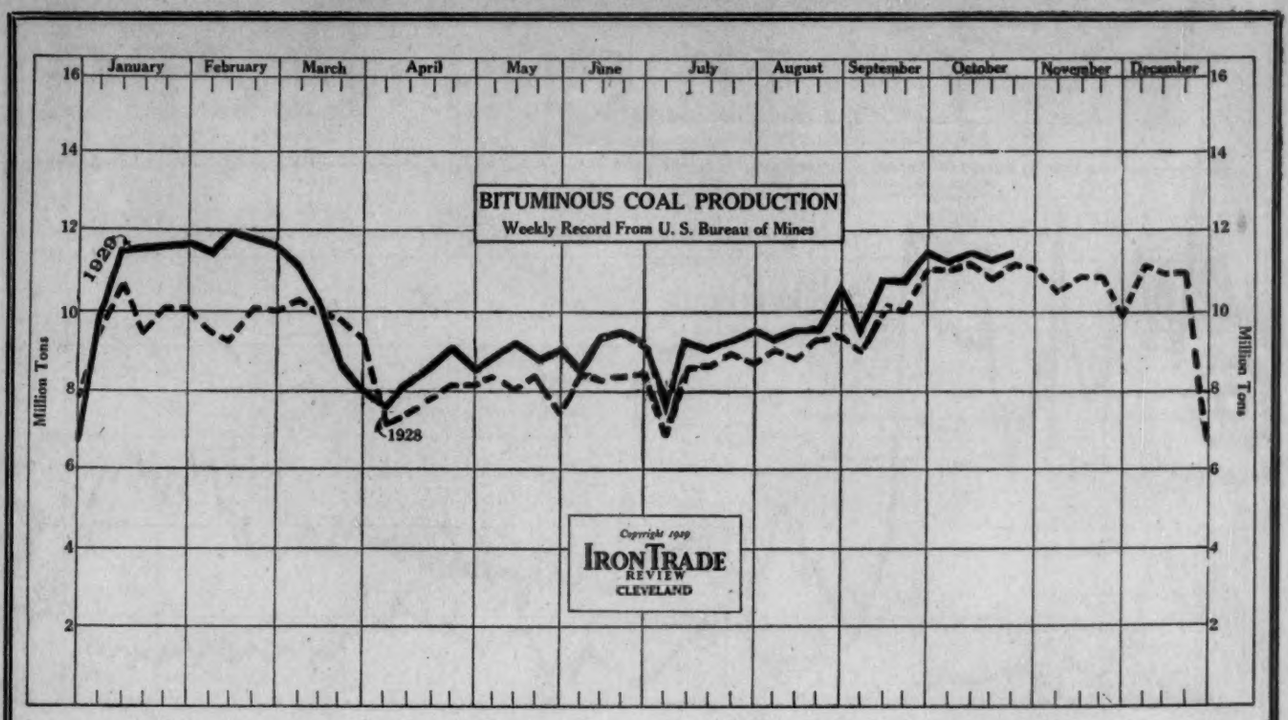
RESULTS of the first nine months of 1929 for the corporation and for most other iron and steel companies reveal new high earning records. These figures are so favorable that the full results for the year promise to be large in the face of the fact that last quarter business is showing some decline.

HOW much the decline in business during the period will be aggravated by the recent stock market break remains to be seen. Probably its greatest effect will be upon business psychology and this may be improved by the demonstration of faith in the industrial future and huge investing power which appeared.

INSOFAR as the iron and steel trade is concerned, the most serious symptom is the situation in the automobile industry. Production during the first 10 months went over 5,000,000 cars and trucks compared with 4,600,000 for all of 1928. It seems probable that the domestic and foreign markets are not prepared to absorb so many cars in any one year.

THE used car problem is even more perplexing and the only apparent adequate solution is a sharp curtailment of production over the remainder of the year. This now seems to be the program for the industry and it will mean a still further lessening of demand for steel and other materials from which cars are made, for a few months, but it should have the constructive result of clearing the decks for normal activity in 1930.

The Business Trend

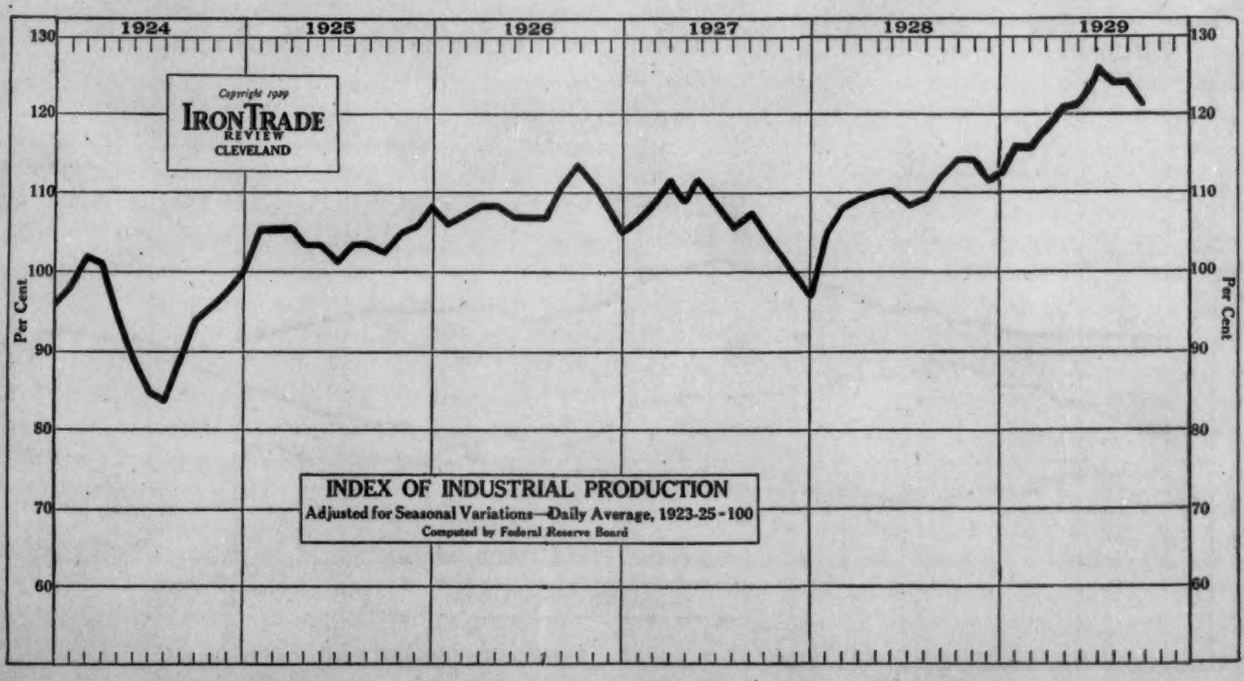


Coal Production

OUTPUT of soft coal continues to hold at good levels for the season. In the week ended Oct. 26 the total estimated production was 11,383,000 tons, compared with 11,150,000 tons one week before and 11,248,000 tons one year ago. For the calendar year to date the aggregate output is 425,467,000 tons, compared with 395,567,000 tons for the corresponding period of 1928. In 1927 the total for the like period was 430,014,000 tons, and in 1928 it was 450,756,000 tons. This year's gain reflects industrial activity.

Industrial Production

INDUSTRIAL activity increased less in September than is usual at that season. Production during the month continued above the level of one year ago, according to the compilation of the federal reserve board at Washington. For the third quarter of the year production in industries was at a rate approximately 10 per cent above 1928. Declines for iron, steel, automobiles and tires and a smaller than seasonal increase in activities in textile and shoe industries mark the industrial trend for September.



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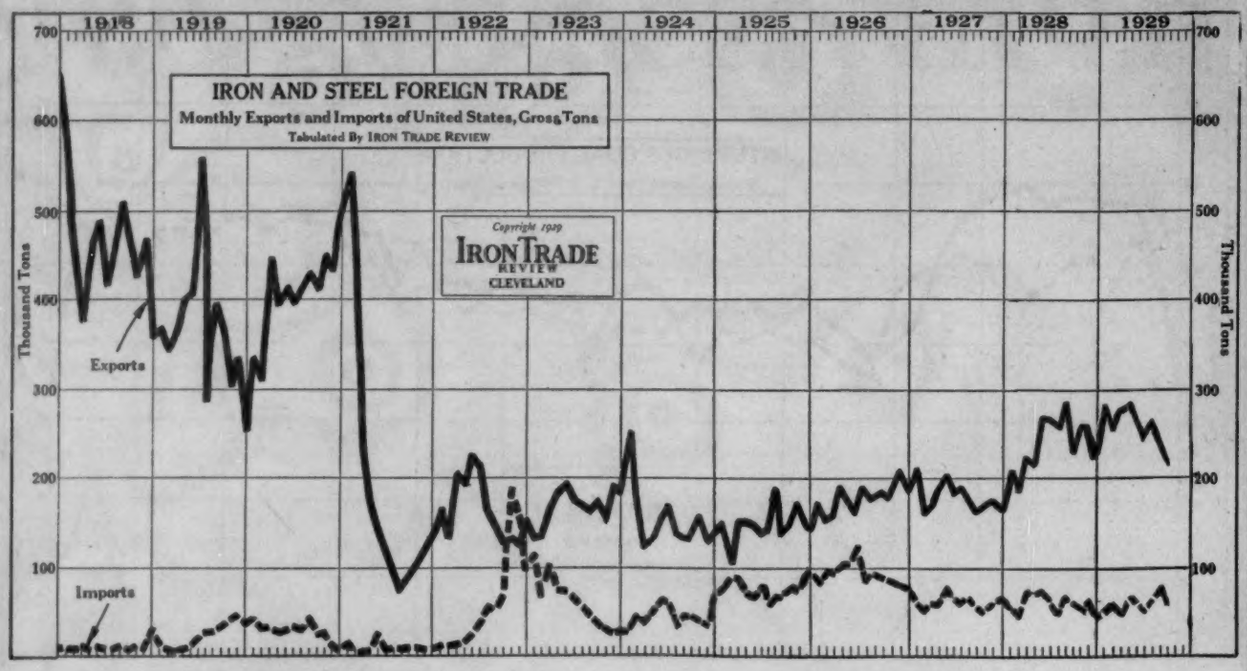
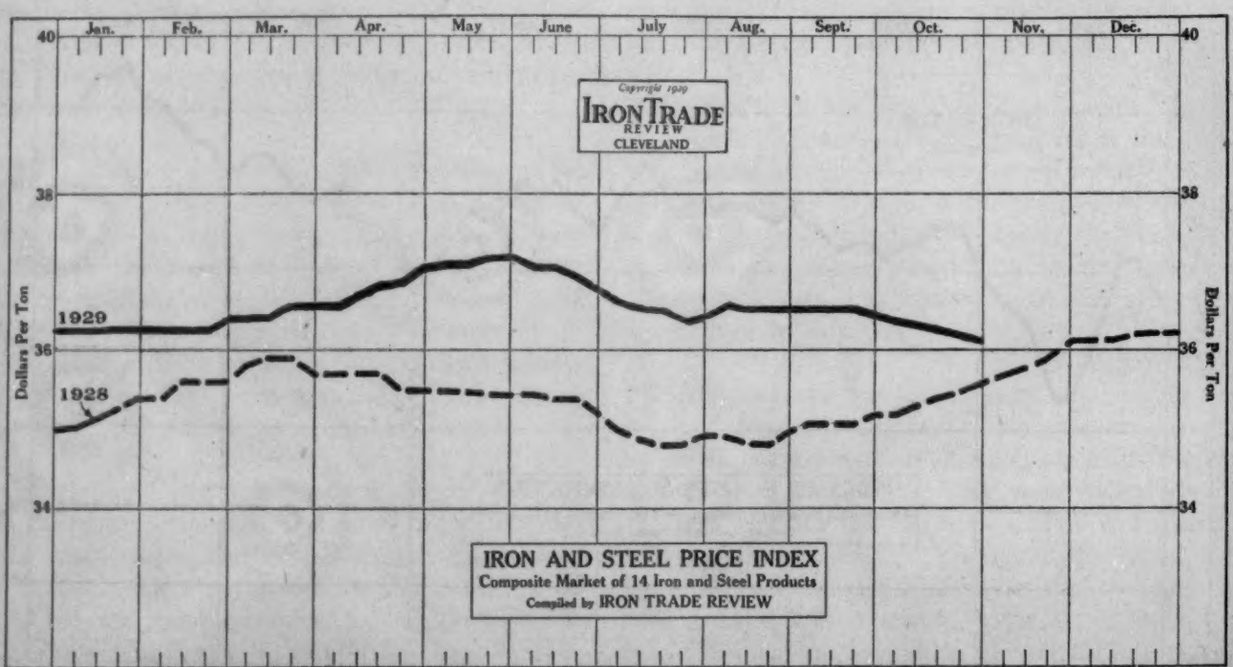


Steel Foreign Trade

FURTHER decline was witnessed in exports of iron and steel during September, continuing the tendency over recent months. The total volume of exports for the month was 222,408 tons, compared with 242,856 tons in August and 228,006 tons in September, 1928. For the first nine months of the year exports were 2,327,635 tons, compared with 2,126,120 tons one year ago. Imports were 60,974 tons, against 83,969 tons in August and 57,782 tons in September, 1928. Nine months imports were 574,166 tons.

Steel Price Index

WEAKNESS has continued to prevail in the iron and steel markets. IRON TRADE REVIEW composite market average at the close of October stood at $36.09 a ton. This compared with $36.16 a ton one week before and an average of $36.50 a ton for all of September. The price level continues slightly above that of one year ago, when IRON TRADE REVIEW composite market average stood at $35.53 a ton. The average has fallen about $1 a ton from the high point of this year.



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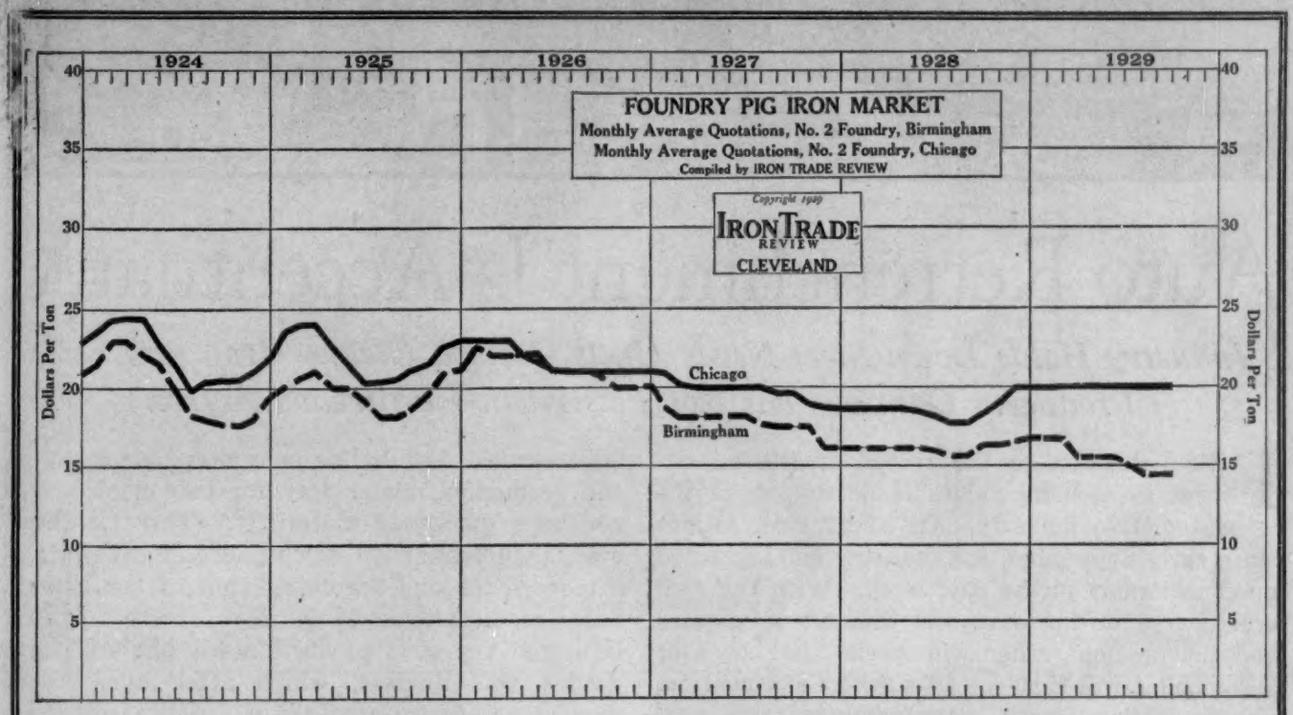
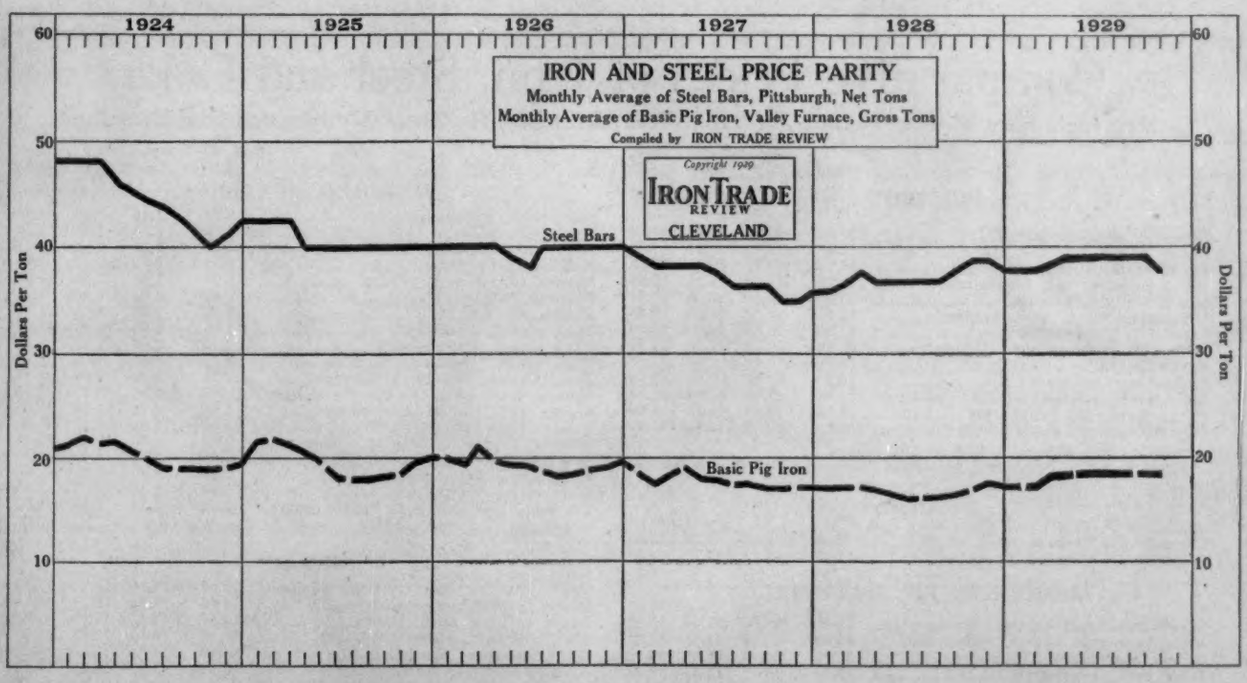


Foundry Pig Iron

NO CHANGE has taken place in the foundry pig iron market during the past month. No. 2 foundry, Chicago, continues to be quoted at $20 a ton, being unchanged since late in 1928. One year ago the quotation stood at $22.26 a ton. Southern No. 2 iron also has been holding its own at $14 a ton. This had shown some decline in earlier months this year and compared with $16.25 a ton in October, 1928. The spread between southern iron and northern iron is $6 a ton.

Iron and Steel Price Parity

DURING October the quotation on steel bars at Pittsburgh declined to $38 a ton. This was the first decline in finished steel prices as represented by steel bars since late in 1928. Pig iron prices have held steady at $18.50 a ton for basic valley iron. The spread between finished steel and pig iron is $19.50 a ton, compared with the recently preceding spread of $20.50 a ton. One year ago when steel bars were quoted at $39 a ton and pig iron was at $16.85 a ton the spread was $22.15 a ton.



Auto Retrenchment Is Accentuated

Industry Holds Down Steel Needs Until Outlook Clears—Iron and Steel Producers Cautious but Not Pessimistic—Railroads Active

FIRST reaction to the recent drastic adjustment in security values is developing in the automotive industry. On short steel rations since early September, the industry has tightened up considerably in the past week. With the general course of business still difficult to discern and the opinion rather widespread that sales of automobiles will early be affected by any contraction in buying power, manufacturers find it expedient to mark time.

Atmosphere of Caution Prevails

One important maker of high-price cars has suspended all commitments for steel. A producer of low-price cars is buying no material before Dec. 1. Other makers are holding up schedules on new models. Automobile production having slipped considerably from the year's high prior to the stock market crash, the effect is not so much to depress production further as to defer the resumption looked for this month.

Other than this retrenchment in automotive requirements, which has hit sheet, strip and bar mills hardest, the decline in iron and steel buying and production, under way for two months, has not been quickened materially. There is, however, an unmistakable atmosphere of caution and a more frank and searching view of the general business situation. It is more freely conceded that iron and steel production will show a sharp decline this quarter, which after nine record months should be more of a healthy corrective than an indication of weakness.

Look to Railroads to Cushion Shock

Through the confusion which Wall Street has created, an underlying current of confidence is emerging. Beyond possibly an overproduction of automobiles, there is no speculative element to be shaken out of the industry. Railroad business in hand or in prospect promises unusual support for the first half of 1930. In that period shipyards will be operating at capacity, building may be aided by an improved credit situation and the farm situation now compares more favorably with industry. Iron and steel cannot be immune

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Nov. 6, 1929	Oct. 1929	Aug. 1929	Nov. 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.96
Basic, valley	18.50	18.50	18.50	17.70
Basic, eastern, del. eastern Pa.	19.75	19.75	19.85	19.75
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.56
No. 2 foundry, Chicago	20.00	20.00	20.00	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	16.38
**No. 2X, Virginia furnace	18.25	19.65	20.00	20.50
**No. 2X, Eastern del. Philadelphia	22.26	22.26	22.26	21.51
Malleable, valley	19.00	19.00	19.00	17.90
Malleable, Chicago	20.00	20.00	20.00	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.66
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.65	2.65	2.75	2.85
Connellsville foundry, ovens	3.75	3.75	3.75	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.00	35.00	33.60
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	33.60
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	33.00
Wire rods, Pittsburgh	40.00	40.00	42.00	42.00

	Nov. 6, 1929	Oct. 1929	Aug. 1929	Nov. 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.90	1.95	1.95
Steel bars, Chicago	2.00	2.05	2.05	2.00
Steel bars, Philadelphia	2.22	2.22	2.27	2.27
Iron bars, Chicago	2.00	2.05	2.05	2.00
Shapes, Pittsburgh	1.90	1.95	1.95	1.95
Shapes, Philadelphia	2.01	2.01	2.06	2.11
Shapes, Chicago	2.00	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.95	1.95
Tank plates, Philadelphia	2.15	2.05	2.15	2.15
Tank plates, Chicago	2.00	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.80	2.85	2.80
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.35	2.35	2.05
Sheets, gal., No. 24, Pittsburgh	3.50	3.50	3.55	3.55
Sheets, black, No. 24, Chicago	3.00	3.05	3.10	3.00
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.50	2.15
Sheets, galvanized, No. 24, Chicago	3.65	3.70	3.80	3.65
Plain wire, Pittsburgh	2.40	2.40	2.50	2.40
Wire nails, Pittsburgh	2.40	2.45	2.60	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.30

*Comparison for November, 1928, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	17.00	17.30	18.90	17.35
Heavy melting steel, eastern Pa.	15.50	15.80	16.75	15.90
Heavy melting steel, Chicago	13.50	14.45	15.05	14.50
No. 1 wrought, eastern Pa.	16.25	16.00	16.25	15.50
No. 1 wrought, Chicago	14.50	14.85	15.40	14.25
Rails for rolling, Chicago	16.00	17.05	17.75	16.50

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.15c
New York, del.	2.225c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	1.96c to 2.06c
New York, del.	2.145c to 2.195c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c

BARS

SOFT STEEL

Pittsburgh, base	1.90c
Chicago, base	2.00c to 2.05c
Birmingham, base	2.10c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c
Cleveland, del., outside mills	1.95c
Philadelphia, del.	2.22c
New York, delivered	2.24c to 2.29c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.07c to 2.19c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.00c to 2.10c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.05c
Chicago, billet	2.00c to 2.10c
Chicago, rail steel	1.95c to 2.00c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.52c to 2.62c

STAINLESS STEEL OR IRON

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets	35.00c
Plates	31.00c
Bars	28.00c

SHEETS

SHEET MILL BLACK, No. 24

Pittsburgh, base	2.75c
Philadelphia, delivered	3.17c
Gary, Indiana Harbor	2.95c to 3.05c
Chicago, delivered	3.00c to 3.10c
Birmingham, base	3.00c
St. Louis, del.	3.27c

TIN MILL BLACK, No. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.50c
Philadelphia, delivered	3.72c to 3.82c
Gary, Indiana Harbor	3.60c to 3.70c
Chicago, delivered	3.65c to 3.75c
Birmingham, base	3.70c
St. Louis, del.	3.92c

BLUE ANNEALED

Sheets, No. 13

Pittsburgh, base	2.35c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.67c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.00c
Detroit, delivered	4.29c

FURNITURE

Pittsburgh	4.10c to 4.20c

(*Turn to the following page*)

to any general business reaction, but producers cannot bring themselves to believe that a severe depression awaits them.

October's showing in pig iron production is important in that it reveals extraordinary activity despite a steady decline since the alltime peak of last May. The October daily rate was 115,747 gross tons, compared with 116,548 tons in September, the record 125,753 tons of May, and 108,824 tons last October. The previous October record was 113,167 tons, in 1916. The 3,588,146 tons made in October brings the 10-month total to 36,250,846 tons, also a record. Five merchant and three steelworks stacks were lighted and seven steelworks stacks were dropped in the month, making 205 stacks active as of Oct. 31, or one more than on Sept. 30. However, two steelworks stacks went out Nov. 1.

Car and Locomotive Inquiry Heavy

Railroad participation in the steel market has been heightened, if anything, in the past week. Active freight car inquiry includes 5000 for the Rock Island, 3800 for the St. Louis-San Francisco, 2304 for the Missouri Pacific and 600 for the Burlington. The New York Central, Illinois Central and Missouri, Kansas & Texas are expected in the market shortly. The Southern Pacific will place 122,000 tons of rails, the North Western 40,000 to 50,000 tons and Baltimore & Ohio and Denver & Rio Grande unstated tonnages. Track fastening orders of unusual size are slated for early release. The unusual total of 410 locomotives, including 135 for Chesapeake & Ohio and 130 for Erie, is expected before builders shortly.

Shipyards, already well booked for the next six months, are weighing additional business. Two United States Lines ships will require 28,000 tons of plates and shapes and two Standard Oil tankers 12,000 to 14,000 tons.

Cold Finished Off $2 a Ton

Structural demand is fair in most districts and good in the East. Moderate buying of bars, sheets and strip by other users fails to neutralize defection of automotive consumers. Cold finished bars have declined $2 per ton. Sheet and strip prices are under pressure, with some shading. Warehouse prices in some cities reflect adjustments in wire products and sheets.

While ingot operations are not much below 80 per cent, finishing departments are not averaging over 70 per cent. At Youngstown 27 out of 51 independent open-hearth furnaces and 79 out of 120 independent sheet mills are on. Chicago and Pittsburgh ingot production is 80 per cent, and Buffalo 70. Strip mills are hardest hit, some being down and others not over 50 per cent.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (November 6, 1929)	$36.09
Last week (October 30, 1929)	36.09
One month ago (October, 1929)	36.23
Three months ago (August, 1929)	36.54
One year ago (November, 1928)	36.02
Ten years ago (November, 1919)	51.28
Fifteen years ago (November, 1914)	23.39

After declining for six consecutive weeks the IRON TRADE REVIEW composite of 14 leading iron and steel products is stationary this week at $36.09. The October average was $36.23 and the year's high, in May, was $37.13.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 1/8 to 24-in., Pitts	1.90c
Do, delivered Detroit	2.09c to 2.19c
Hot strip, bands 6 in. and under, Chicago	2.10c
Do, 6 1/8 to 23 1/8	2.00c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.20c
Do, delivered, Detroit	2.435c
Shafting (turned, polished) Pittsburgh, Buffalo	2.20c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.55c to 3.00c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)

	Trade	Large Jobbers
Bright plain wire, 6 to 9 gage		2.40c
Annealed wire	2.65c	2.55c
Galvanized wire	3.10c	3.00c
Barbed wire, galvanized	3.15c	3.05c

(Per 100-pound keg)

Wire nails	$2.50	$2.40
Galvanized nails	4.50	4.40
Polished staples	2.95	2.85
Galvanized staples	3.20	3.10
Cement coated nails	2.50	2.40
Wire, delivered Detroit		2.57c
Nails, delivered Detroit	$2.57 to	2.72

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Sheet piling, base, Pittsburgh	2.25c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	37.50 to 39.50
Four-inch, New York	40.00 to 41.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24— 4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.702 to 26.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off
Stove bolts, 75, 20 10 and 5 off in pkgs., 75, 10, 10 and 5 with 2½ off in bulk.	
Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	2.90c to 3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	40.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	43.00
Youngstown	40.00 to 42.00

SKELP

All grades, Pittsburgh	1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks

Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% manganese	12.00 to 12.50
North African low phosphorus	12.50
Swedish basic, 65%	10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%...	nominal
Tungsten future, short ton unit, duty paid	15.35 to 15.50
Chrome, 48-50%, c.i.f. long ton	24.00 to 25.00

MANGANESE ORE

Prices, not including duty, are cents per unit.

Brazilian (47-48 per cent)	30 to 32 cents
Indian	30 to 34 cents
Caucasian, (50-55 per cent)	32 to 34 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$21.00

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Is Quieter—Shipments on Contracts Declining Less Rapidly Than New Orders—First Quarter Inquiries Lacking

MELTERS' inventories of pig iron are lower than at any period in several months, accounting for the steady shipments from blast furnaces. The October volume was about equal to that of September, due to the heavy movement in the early part of the month, while current shipments continue at a slowly declining rate. Lake furnaces are feeling the lack of shipping orders from the automotive industry. New orders continue to shrink, and are practically limited to small, spot requirements. A few substantial orders were placed by eastern melters in the past week. Southern furnaces sold about 10,000 tons of basic. A few comparatively small orders for known requirements in the first half are noted. Prices are steady.

PITTSBURGH, Nov. 5.—The pig iron market has experienced another week of light buying. Consumers are taking shipments on old orders in fair volume, but show no interest in future requirements. The only new buying of consequence is that by a Jeannette, Pa., melter who placed about 700 tons of foundry and malleable iron with several sellers. Other business is limited to a few carloads at a time. October shipments were only slightly below those of September, and the movement is exceeding incoming business. Reduced operations are in prospect for the remainder of the year. Prices are holding on small orders, while lack of active buying prevents a test of current quotations. No. 2 foundry iron continues $18.50, valley. W. P. Snyder & Co.'s October sales price average for basic is $18.50, valley, and bessemer $19, unchanged for the sixth consecutive month.

Boston, Nov. 5.—Melters show little interest in requirements for first quarter, while current spot sales are light. Approximately 2000 tons was booked in this district in the past week. It is intimated that the 1000 tons of malleable reported purchased last week by a Rhode Island consumer was placed at an equivalent below $17, base, Buffalo. Southern iron has been sold extensively in New England in recent weeks. Prices generally are steady.

New York, Nov. 5.—Pig iron buying continues light. The A. P. Smith Mfg. Co. has closed on 150 tons of No. 2X and 150 of No. 2 plain for first quarter, and the American Steel & Wire Co. on a round tonnage of iron for Worcester, Mass. Thatcher Furnace Co. closed on 3000 tons of foundry iron, the orders being distributed, it is said, among three sellers. A Bridgeport, Conn., consumer has closed on 5000 tons, chiefly foundry. Prices generally are unchanged. Buffalo iron checks back to $17.50 to $18, base, furnace, with southern foundry iron $19 to $19.50, delivered, New York docks.

Philadelphia, Nov. 5.—Pig iron consumers in this district have purchased fully 10,000 tons of Alabama basic recently, some of which is moving here all-rail from Birmingham. Other sales are small. Prices are unchanged.

Buffalo, Nov. 5.—Inquiry and sales are small. Furnaces are not anxious to establish first quarter prices. Southern producers are quoting prices in the East which would force Buffalo furnaces to quote a $17, base, to meet competition. Two large barge shipments of iron are going from Buffalo to Long Island sound points this week or next.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
Basic del., eastern Pa.	19.75 to 20.25
Basic, Buffalo furnace	18.50
Basic, del., eastern Pa.	19.85 to 20.76
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	21.76 to 22.90
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	22.76
No. 1X, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	18.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
Nc. 2 plain, del., Phila.	21.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.28 to 21.91
No. 2 plain, N. J., tidewater	20.78 to 21.78
No. 2 Alabama, Bir. base	14.00 to 14.50
No. 2 Tenn., Birmingham base	14.00 to 14.50
No. 2 Tenn., del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del., Cleveland	20.51 to 21.01
No. 2 Alabama, del. Chicago	19.01 to 20.01
No. 2 Alabama, del. St. Louis	18.42 to 18.92
No. 2, Ala., Phila., dock dely.	19.25 to 19.75
No. 2 Ala., Balt., dock dely.	19.00 to 19.50
No. 2 Ala., N. Y. dock dely.	19.00 to 19.50
No. 2 Ala., Boston, dock dely.	20.75
No. 2X, east., N. J., tidewater	21.28 to 22.28
No. 2X, eastern, del. Phila.	22.26
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.28 to 22.78
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$23.60
No. 1 foundry, del. Montreal	25.00
No. 2 foundry, del. Toronto	23.10
No. 2 foundry, del. Montreal	24.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00
Basic, del. Montreal	23.50

Silvery iron Jackson county, O., furnaces in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50 17—$46.50.

Cleveland, Nov. 5.—Pig iron shipments by merchant furnace interests in the Lake Erie district were approximately the same in October as in September. Despite this, stocks in melters' hands are low, and a continuation of shipments at a fairly active rate is expected through November. The automotive industry clamped down on shipments about the middle of October, but other consuming lines took all the iron due them. Steelworks operations in the Cleveland district also have held up, taking more iron from their own furnaces than a year ago. Sales during the week by furnace interests at Cleveland totaled 10,600 tons, within a few tons of the amount in the preceding week. All sales are in small lots and inquiries are light. Prices are steady.

Cincinnati, Nov. 5.—Little activity in forward coverage was noted here in the past week in the pig iron market. Spot buying of 1500 tons of northern and a like amount of southern foundry iron was reported, with a 600-ton order by a central Indiana consumer. Prices are unchanged.

Chicago, Nov. 5.—Spot sales of northern pig iron lead in market activity, with contract business slow. Some tonnage is being contracted for first quarter, and informal inquiries for that period appear. A local steelworks has occasional lots to offer to the merchant trade. Base grades are steady at $20, Chicago furnace.

St. Louis, Nov. 5.—That there is some interest in pig iron for first quarter is shown by the sale of 1000 tons of malleable by St. Louis Gas & Coke Corp. to a local melter, and receipt of several inquiries. The company's shipments for October were approximately 32,000 tons, about equal to shipments for September. A leading Southern maker sold 1000 to 1200 tons during the week. Southern furnaces have not opened their books for first quarter, but it is understood that the price will be $14.50 f.o.b. Birmingham. Current prices are unchanged.

Birmingham, Ala., Nov. 5.—Few inquiries have developed for first quarter. Small sales for early delivery have eased off but shipments are active.

(*Concluded on Page* 1202)

The Market Section

Coke

Production Further Reduced at Steelworks Ovens—Movement of Industrial Coke Heavier in West

COKE production at steelworks in the Pittsburgh district has been further reduced, but merchant output of beehive furnace fuel is fairly steady. Spot demand for furnace and foundry grades is light, with prices unchanged. New England producers have booked about half of the requirements in that district for first half. Heavier demand for industrial coke noted in the Middle West.

Pittsburgh, Nov. 5.—The market for beehive coke continues quiet, blast furnaces having no need for making additional purchases now, and warm weather restricting activity in heating coke for domestic and industrial requirements. The movement of furnace coke on contracts is holding up fairly well, but spot buying is limited to small lots, and the market is easy. Single carloads bring $2.75, while $2.60 applies on some tonnage. Demand for spot foundry coke also is dull. Surplus fuel is accumulating, and production is held close to requirements. Coke output at steelworks shows further decline, while merchant production is steady.

Production of coke in the Connellsville region for the week ended Oct. 26 was 56,750 tons, compared with 57,360 tons the preceding week and 65,090 tons in the same week a year ago.

Boston, Nov. 5.—Opening of books for first half met with a ready response, and New England ovens are reported as having booked fully 50 per cent of foundry coke requirements for that period at $11, delivered in the $3.10 freight rate zone. The remainder of the New England foundries probably will have their orders on books by the end of the week.

New York, Nov. 5.—Inquiry for furnace coke is more active. Prices are unchanged at $2.75 to $3 per ton, Connellsville. Foundry coke is unchanged at $3.75 to $4.85, Connellsville, with trading spotty. By-product coke is firm at $9 to $9.40, delivered Newark, $11 delivered New England points, and $9, delivered Philadelphia.

Cincinnati, Nov. 5.—Expected seasonal upturn in demand for domestic grades of coke has not developed. Foundry grades of by-product coke are moving at slightly reduced rate, with no new orders booked. Prices are unchanged.

St. Louis, Nov. 5.—Domestic coke is in heavy demand. By-product ovens are reducing their stocks considerably. Foundries are taking their full quotas of coke. Prices are unchanged.

Birmingham, Ala., Nov. 5.—Foundry and domestic coke is moving steadily. The foundry grade holds to $5, base. Birmingham. Alabama coke still is being shipped to the Middle West for use in cupolas and for domestic purposes.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.65 to 2.75
Connellsville foundry	3.75 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Ind'anapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O. ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Consumers Replenishing Stocks—Shipments Fairly Steady

Pittsburgh, Nov. 5.—Ferroalloy shipments last month showed little decrease from the September volume despite the marked reduction in operations in the iron and steel industry. This is partly accounted for by the fact that stocks of consumers were unusually low following the brisk activity of the first nine months of the year and the present period is being used to build up reserves. Ferromanganese and spiegeleisen continue to lead in shipments, although as in other grades there is little business in the spot market. Prices continue steady at $109.79, delivered Pittsburgh, for ferromanganese and $34 for small lots of spiegeleisen. There is little contracting for 1930. Prices on other grades are steady and unchanged.

New York, Nov. 5.—Ferromanganese continues $105, duty paid, with specifications coming out freely notwithstanding slightly lower ingot production. Spiegeleisen also is unchanged at $34, furnace, for the 19 to 21 per cent domestic grades and $34, duty paid, for English spiegeleisen of the same content.

Tungsten is firm but the market is not active. Supplies in Europe appear to be meager. Wolframite tungsten ore is held at $15.35 to $15.50, duty paid, while imported scheelite is slightly higher and domestic scheelite $16.50 a short ton unit. Such ferroalloys as chrome, silicon, vanadium and molybdemnum are firm with prices unchanged. Current shipments are lighter than they were earlier in the year.

Bolts, Nuts, Rivets

October Demand Slightly Below That of September

NUT AND BOLT PRICES, PAGE 1198

Pittsburgh, Nov. 5.—October business in bolts and nuts was off from that of the preceding month, although rivet demand showed some improvement. Structural shops and jobbers are steady buyers of rivets. An easier price situation has developed in large rivets, occasional sales being reported at 2.90c, although a number of producers continue to quote 3.10c. Bolts and nuts are steady at 60 to 70 off. Operations hold at 65 to 75 per cent.

Philadelphia, Nov. 5.—Bolt, nut and rivet demand continues good, with the October total above September. Prices are holding steady. On rivets 3.10c, base, Pittsburgh, continues firm. A feature of the market is the absence of demand from jobbers.

Cleveland, Nov. 5.—Demand for nuts, bolts and rivets is only fair. Operations average 60 to 65 per cent and some of that is devoted to stock. Possibly 60 or 70 tons of rivets are to be divided between local makers by the locomotive builder which received an award of 25 locomotives from the Pennsylvania railroad.

Chicago, Nov. 5.—Steady specifications from farm equipment builders feature the market on nuts, bolts and rivets. Lack of automotive demand is felt keenly. Operations are about 70 per cent.

Zillah Iron Works, Zillah, Wash., damaged by fire some time ago, has been reopened under new management under the name of Zillah Machine shop.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Listless Attitude of Buyers and Sellers Rules—Prices Sag Further on Inaction

SCRAP prices have yielded somewhat further on lack of buying by consumers and orders to hold up shipments on contracts. Dealers are not interested in buying for speculation and supplies are ample for all needs. At the same time yard stocks have been well depleted by shipments on contracts.

Chicago, Nov. 5.—Led by a drop of 75 cents a ton in heavy melting steel, iron and steel scrap prices have declined 25 cents to $1.50 a ton. Sellers are leaving untouched much of the scrap tonnage now being offered from industrial sources. Shipping restrictions imposed by two steelworks and several foundry consumers have helped develop an uncertain position, coincident with continued heavy offerings by industrial and railroad scrap producers. Nevertheless, the sharp drop in prices is described as illogical in view of the fact that yard dealers virtually have stripped bare their prepared stocks in recent heavy shipments. Besides heavy melting steel, miscellaneous rail scrap, rolled steel car wheels, shoveling steel and No. 2 wrought each dropped 75 cents, while agricultural cast scrap and iron arch bars dropped $1.50. Malleable grades are off 50 cents to $1. Cast borings again weakened 25 cents, leaving the market at the low point of the year. The recent inquiry for cast scrap in this market is not expected to develop into an immediate tonnage sale.

Boston, Nov. 5.—Pennsylvania mills are practically out of the market, and

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.50
Boston, dealers	10.75 to 11.25
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	15.00 to 16.50
Buffalo, No. 2	13.25 to 13.75
Chicago	13.50 to 14.00
Cincinnati, deal.	13.00 to 13.50
Cleveland, No. 1	15.00 to 15.50
Cleveland, No. 2	14.00 to 14.25
Detroit, No. 1 deal.	12.50 to 13.00
Detroit, No. 2 deal.	11.50 to 11.75
East Pa., del. mill	15.50
N. Y., deal. R. R.	12.00 to 12.35
N. Y., deal. yd.	8.00 to 8.25
Pittsburgh, No. 1	16.50 to 17.50
St. Louis, No. 1	13.00 to 13.50
Valleys, No. 1	17.00 to 17.50

COMPRESSED SHEETS

Buffalo (dealers)	13.25 to 13.75
Chicago	12.00 to 12.50
Cleveland	14.75 to 15.25
Detroit, dealers	12.50 to 13.00
E. Pa. new mat.	14.50 to 15.00
Pittsburgh	16.75 to 17.25
Valleys	16.00 to 16.50

BUNDLED SHEETS

Buffalo	10.50 to 10.75
Cincinnati, deal.	10.75 to 11.25
Cleveland	12.50 to 13.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	15.50 to 16.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	8.50 to 9.00
Cincinnati	8.50 to 9.00
Detroit, dealers	9.00 to 9.50
St. Louis	9.50 to 10.00

STEEL RAILS, SHORT

Birmingham	14.00 to 15.00
Boston	10.50 to 10.75
Buffalo	18.00 to 18.50
Chicago (3 feet)	16.75 to 17.25
Chicago, 2 ft. and under	18.50 to 19.00
Cincinnati, deal.	18.25 to 18.75
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	19.50 to 20.00
Pittsburgh, 2 feet and under	20.50 to 21.00
St. Louis	18.00 to 18.50

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	11.00 to 11.50
Buffalo	12.50 to 12.75
Chicago, net	11.00 to 11.50
Cinn., deal., net	9.00 to 9.50
Detroit, net, deal.	9.50 to 10.00
Eastern Pa.	12.00
N. Y., deal., mill	8.00 to 8.25
St. Louis	12.00 to 12.50

COUPLERS, SPRINGS

Buffalo	17.00 to 17.50
Chicago	16.50 to 17.00
Eastern Pa.	21.00
Pittsburgh	20.00 to 20.50
St. Louis	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	16.50 to 17.00
St. Louis	15.50 to 16.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	18.50 to 18.75
Cleve. billet and bloom crops	18.00 to 18.50
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.00 to 22.50
Pitts. sheet bar crops	21.50 to 22.00

FROGS, SWITCHES, GUARDS

Chicago	14.50 to 15.00
St. Louis	15.00 to 15.50

SHOVELING STEEL

Chicago	13.50 to 14.00
Cleveland	11.50 to 12.00
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	13.00 to 13.50
Buffalo, No. 2	15.00 to 16.00
Chicago, No. 1	14.50 to 15.10
Chicago, No. 2	13.50 to 14.00
Cincinnati, No. 2	13.00 to 13.50
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	17.00 to 17.50
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.00 to 13.50

SPECIFICATION PIPE

Boston	9.25 to 9.50
Eastern Pa.	14.50
New York, deal.	10.25

BUSHELING

Buffalo, No. 1	13.25 to 13.75
Chicago, No. 1	12.00 to 12.50
Cinn., No. 1 deal.	10.75 to 11.25
Cinn., No. 2	7.00 to 7.50
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 deal.	11.50 to 12.00
St. Louis, No. 1	9.75 to 10.25
Valleys, new No. 1	15.50 to 16.00

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.75 to 7.00
Buffalo	8.75 to 9.25
Chicago	7.50 to 8.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.00 to 10.50
Detroit	7.75 to 8.00
Eastern Pa.	12.00
New York, deal.	7.50 to 8.00
Pittsburgh	11.00 to 12.00
St. Louis	7.25 to 7.75
Valleys	12.00 to 12.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.50
Buffalo	11.00 to 11.50
Cincinnati, deal.	8.25 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.25
Pittsburgh	11.00 to 12.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston, chem.	9.00 to 9.50
Boston, dealers	6.75 to 7.00
Buffalo	11.00 to 11.50
Chicago	9.50 to 10.00
Cincinnati, deal	8.75 to 9.25
Cleveland	10.50 to 11.00
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50
New York, deal.	7.25 to 7.75
Pittsburgh	11.00 to 12.00
St. Louis	9.25 to 9.75

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.75 to 12.25
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00 to 12.50
New York, deal.	8.75 to 9.25
St. Louis	11.50 to 12.00

FORGE FLASHINGS

Boston, dealers	9.50 to 10.00
Buffalo	13.50 to 14.00
Cleve. over 10 in.	13.50 to 14.00
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.50 to 9.00
Chicago	18.50 to 19.00
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	17.50 to 18.00
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	14.00 to 14.50
Chicago steelworks	12.00 to 12.50
Cleveland	14.00 to 14.50
Eastern Pa.	15.00
Pittsburgh	15.50 to 16.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	17.50 to 18.00
Buffalo	17.50 to 18.00
Chicago	18.50 to 19.00
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.00 to 22.00
St. Louis	19.00 to 19.50

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.35 to 17.90
Eastern Pa.	19.50
New York, deal.	14.00 to 14.50
St. Louis	18.00 to 18.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.50 to 12.50
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	17.50 to 18.00
Chicago, iron	14.00 to 14.50
Chi., rolled steel	18.25 to 18.75
Cincinnati	12.50 to 13.00
N. Y., iron, deal.	12.00 to 12.50
Pittsburgh, iron	15.50 to 16.00
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	14.50 to 15.00
St. Louis, steel	17.75 to 18.25

No. 1 CAST SCRAP

Birmingham, cup.	12.50 to 13.50
Buffalo	15.25 to 15.75
Boston, textile	14.00 to 14.50
Chicago, mach.	15.65 to 16.25
Chicago, railroad	14.50 to 15.10
Chicago, agri.	13.45 to 14.00
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.75 to 16.25
Detroit, net, deal.	12.00 to 12.50
East Pa., cupola	16.00
N. Y. cup. deal.	12.50 to 13.00
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.00 to 11.50
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00 to 14.50
New York, deal.	11.00 to 11.50
Pittsburgh	11.00 to 12.00

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	17.25 to 17.50
Chicago, agri.	14.50 to 15.00
Chicago, railroad	16.50 to 17.00
Cinn., R. R., deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	18.00 to 18.50
Detroit auto deal.	14.50 to 15.00
St. Louis	14.50 to 15.00

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.50 to 14.50
Boston	12.00 to 12.50
Buffalo	15.00 to 15.50
Chicago	16.00 to 16.50
Eastern Pa.	16.50 to 17.00
New York	12.75 to 13.25
St. Louis	15.25 to 15.75

LOCOMOTIVE TIRES

Chicago, cut	18.00 to 18.50
St. Louis, No. 1	15.00 to 15.50

LOW PHOS. PUNCHINGS

Chicago	16.00 to 16.50
Pittsburgh	19.50 to 20.00

brokers and dealers are apparently not interested in prevailing prices. Sellers show little interest.

New York, Nov. 5.—Stove plate for mill consumption is off slightly, local dealers offering $8 to $8.25, New York, compared with a spread of $8 to $8.50, recently. Other prices are easy but unchanged. Consuming demand in general is quiet, although borings and turnings have been moving rather briskly. The cast descriptions are sluggish.

Buffalo, Nov. 5.—Following purchase of a tonnage of heavy melting steel, Bethlehem is said to have withdrawn from the market for scrap for Lackawanna. The last price paid is reported to have been $15 for No. 1 and $13.50 for No. 2 heavy melting steel. This is a further decline of 50 cents a ton from the last previous prices at Lackawanna.

Philadelphia, Nov. 5.—Sales of small and moderate lots constitute the only activity in iron and steel scrap in this district. Prices are unchanged and are not being tested.

Pittsburgh, Nov. 5.—Iron and steel scrap continues quiet and weak. Prices generally are unchanged, due to lack of mill buying. Closing of the Pennsylvania railroad scrap list this week is expected to give some indication of price trends. Heavy melting steel is quotable at around $17, with few consumers interested. Compressed sheets are slightly stronger than heavy melting steel, with offerings limited.

Cleveland, Nov. 5.—The leading consumer of iron and steel scrap in this district has curtailed shipments of blast furnace grades in addition to open-hearth material. Another mill continues to take a few cars of No. 1 steel. Activity among brokers here is confined principally to shipment of a few odd lots of heavy melting steel and machine shop turnings to the Valley district. Sales are restricted to a few small tonnages of low phos for foundry consumption. Prices are largely nominal. Brokers are paying $15.50 for strictly No. 1 steel, but are buying little. Turnings bring $10.50.

Cincinnati, Nov. 5.—A fair volume of iron and steel scrap is being moved and prices are somewhat more stable than in recent weeks. The market for cast scrap continues dull.

Detroit, Nov. 5.—Open-hearth grades of iron and steel scrap are somewhat weaker and several items have declined about 50 cents per ton. Scarcity of blast furnace grades is keeping them relatively firm at present levels.

St. Louis, Nov. 5.—Buying of iron and steel scrap by mills in the St. Louis industrial district has been hit by the slump in the stock market. Consumers are cancelling shipments against contracts which have expired, and in some instances dealers have been asked to withhold shipments against live contracts. Heavy melting steel is down 50 cents a ton, and most of the other items on the list are lower, the range of reduction being from 25 cents to $1.50 a ton.

Birmingham, Ala., Nov. 5.—Except in heavy melting steel, the iron and steel scrap market is quiet. Quotations are unchanged, except in one or two instances. Low prices which have prevailed for some time are nominal.

Toronto, Ont., Nov. 5.—A slowing down in iron and steel scrap business is reported by both Toronto and Montreal dealers, chiefly due to withdrawal of melters from the market with forward delivery contracts. Spot demand is holding at a good level with consumers placing orders at frequent intervals, but mostly in limited tonnage. Steel scrap is moving slowly, while iron scrap has a steady spot call.

Canadian Scrap

Dealers' Buying Prices

MONTREAL
Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Semifinished Steel

Market Quiet at Pittsburgh—Sales in Middle West Improve

SEMIFINISHED STEEL PRICES, PAGE 1198

Pittsburgh, Nov. 5.—New business in semifinished material continues dull, with specifications against existing contracts reflecting the restricted operations in sheet, strip and bar production. Demand for forging billets is fair but is off considerably from the rate of preceding months. Lack of buying prevents the market from receiving adequate test, and although prices are not strong, quotations are unchanged at $35 for rerolling billets, sheet bars and slabs, and $40 for forging billets and wire rods.

Chicago, Nov. 5.—Quarterly sales of semifinished material to the detached finishing mills in western territory are at a fairly heavy rate. One producer of semifinished material in this territory has been enabled to build some stocks of sheet bars in view of the lighter sheet finishing mill operations. Chicago base price for commercial, or rerolling, billets, 4 x 4-inch, remains at $37. Wire rods are $41 to $43, Chicago.

Youngstown, O., Nov. 5.—Specifications for semifinished steel are about half the volume reported by makers a few weeks ago, and further reduction of operations is noted. Sheet bars, billets and slabs are 35, Pittsburgh or Youngstown, and wire rods $40, Pittsburgh or Cleveland.

Cleveland, Nov. 5.—Shipments of sheet bars, billets and slabs show an increase in some directions, and a decline in others, the net result being less activity than a week ago. The leading merchant producer here is operating eight of its 14 open hearths, the lowest rate of operations in about two years. Prices are unchanged.

Operating Rates

Pittsburgh Declines, Chicago Unchanged, Youngstown District Lower

Pittsburgh—Ingot operations are off this week, being around 80 per cent. Averages of some independent mills are as low as 50 per cent. Finishing mill schedules also continue downward, with sheet and tin plate production both on a 65 to 70 per cent basis. Strip mill schedules hold at 50 per cent. Pipe mill operations are lower at 65 to 70 per cent.

Buffalo—There were 26 open hearths producing steel in this district this week, with 11 idle. Operations represented 70 per cent. Steelworks probably will maintain about this schedule of production for the rest of this month unless there is a further drop in demand.

Chicago—Steelmaking operations remain at about 80 per cent despite downward revisions in schedules of some of the finishing mills. Sheet mill operations have dropped a few points recently and now are about 75 to 80 per cent. Bar and plate mill operations for the district remain at about 80 per cent. Rail mill operations are about 80 per cent, against 50 per cent, a year ago. Twenty-five of the 36 steelworks furnaces in the district are blowing.

Youngstown, O.—Steel operations show further curtailment with the local Carnegie division reducing operations from 80 to 70 per cent. Of the 51 open-hearth furnaces only 27 will pour during the week, the lowest number engaged so far this year. Bessemer steel is about 60 per cent. Of the 120 independent sheet mills 79 are scheduled. Independent plate mills are at 80 per cent, with the corporation at 75 per cent. Strip mill operations will not average better than 75 per cent. Of 21 pipe mill units, 15 continue under power.

Pig Iron

(*Concluded from Page* 1199)

Considerable iron is being moved to other districts. Prices are steady.

Toronto, Ont., Nov. 5.—Movement of merchant pig iron continues in large volume. New demand is falling off, however, with current business restricted to spot buying. Producers are carrying extensive unfilled orders, which assure heavy shipments to the end of the year. Prices are unchanged.

Interstate Tool Co., Detroit, has increased capital from $25,000 to $75,000.

The Market Section

Bars

Light Tonnage Moving but Prices Hold Well—Spot Requirements Make Most Bookings

RECENT car orders are furnishing bar mills at Chicago most of the current tonnage but part of this is deferred until builders gain headway. In this center some deliveries are being pushing back to two or three weeks. Prices have not been affected by present light buying. Lack of automotive coverage holds back much tonnage that had been expected.

BAR PRICES, PAGE 1197

Chicago, Nov. 5.—Bar mills are maintaining about 80 per cent operations through miscellaneous metalworking and manufacturing needs, car and farm equipment specifications, normal orders for stock material and cold finished demand. Mills are aided materially by specifications from car building accounts for cars recently ordered. While railroad orders are encouraging, much of this tonnage is of the future. Finishing mills now are operating to a large extent on spot tonnage. Backlogs are lacking. Cold finished and alloy steel bar activity awaits automotive buying, and continues light. Specifications for spot bar tonnage are being accommodated in current mill rollings, although shipments on certain sizes have been lengthened two to three weeks. Alloy steel bar mill operations for this territory are barely 60 to 65 per cent. Soft steel bars are 2.00c to 2.05c, Chicago.

Philadelphia, Nov. 5.—Demand for steel bars has improved and tonnage the past week has been 25 per cent better for some mills in this district. The price continues firm at 1.90c, Pittsburgh. A factor causing mills some concern is that jobbers apparently have increased considerably their sales of bars in carloads for direct mill shipment.

Pittsburgh, Nov. 5.—Incoming business in merchant bars is light, with restricted automotive activity accounting for much of the current quiet. October specifications showed a slight gain over the light September tonnage but fell considerably below the rate a year ago. With consumers' stocks at a minimum, current demand is for immediate requirements and requests for prompt shipment are frequent. Mills are unable to acquire backlogs and production is dependent upon the daily orders. The market is 1.90c, Pittsburgh.

Cleveland, Nov. 5.—Bar specifications still show no signs of expanding. Some buyers expected to release appreciable amounts by now still are deferring action. Promised automotive improvement has not developed. Miscellaneous users do not buy more than they have to have. Outside mills quote 1.90c to 1.95c, Cleveland, depending upon destination. Local mills are not strong at 1.90c, base, delivered.

McWane Cast Iron Pipe Co., Birmingham, Ala., is erecting a brick, steel and concrete office and welfare building. The old office, a wooden building, was recently destroyed by fire. The new building will be completed early in December.

Plant Runs Night Shift

American Swedo Iron Co., as the result of unusually large sales of hand puddled wrought iron melting bar, will operate its plant at Danville, Pa., night and day for the remainder of the year. Frank Samuel & Co., Philadelphia, control and are sales agents for the company.

Agree on Merger Terms

Negotiations are reported in progress for merger of the Globe Stove & Range Co., Kokomo, Ind., and American Steel Products Co., Macomb, Ill. Directors of the two firms have agreed on terms, which stockholders will be asked to ratify. No new financing is contemplated.

Lukens Changes Lineup

Lukens Steel Co. has given the management of its Philadelphia and New York sales offices to Alexander Cameron, assistant to the vice president. Harry Loeb continues as district manager at New York and Frank L. Shants assistant district manager at Philadelphia.

Class I railroads Oct. 15 had 107,301 surplus freight cars in good repair and immediately available for service, the car service division of the American Railway association announces. This was a decrease of 4157 cars compared with Oct. 8.

Plates

Backlogs Further Reduced—Car and Ship Requirements Fairly Active—Municipal Jobs Pending

CAR, locomotive and ship tonnage continue the mainstay of the plate market. Chicago mills booked no oil tank work during the week. Further decrease is noted in pipe line fabrication at Milwaukee, which was consuming 75,000 to 85,000 tons monthly during the height of the season. Detroit is taking bids on 4500 tons for a pipe line.

PLATE PRICES, PAGE 1197

New York, Nov. 5.—Plate prices continue steady at 2.05c, Coatesville, with deliveries on sheared and universal plates averaging two weeks. Car and locomotive tonnage is coming out in good volume and ship work continues promising. Standard Transportation Co., a Standard Oil subsidiary, is expected in the market shortly for at least two additional tankers, requiring 6000 to 7000 tons each. Tank work is comprised of small scattered specifications. Action on 6000 tons of 60-inch pipe for Newark has been postponed until Nov. 6, at which time the New York city water department will open bids on 3000 tons of 60-inch.

Boston, Nov. 5.—Plate demand is better than a year ago. Requirements in this district are not all satisfied for fourth quarter. The 1.90c to 2.00c base, Pittsburgh, prices are firm.

Philadelphia, Nov. 5.—Plate demand continues active, and shows improvement in some directions. About 90 per cent of the individual sales bring 1.95c, base, Pittsburgh, or 2.05c, base, Coatesville. Eastern mills are operating at 80 to 90 per cent, but do not have much backlog. The United States Lines Inc. is taking bids on two vessels requiring 28,000 tons of steel. Hudson River Navigation Co. requests bids on one vessel requiring 3000 tons of steel, mainly plates.

Pittsburgh, Nov. 5.—Plate demand remains in fair volume, although backlogs are declining and the outlook for the remainder of the year is less favorable. Backlogs are nearing depletion on large diameter line pipe but freight car and ship work continue in good volume. Little additional business is appearing in barges and local builders are nearing the end of their backlogs. Plate producers continue to quote 1.95c, Pittsburgh, although the market generally is 1.90c.

Cleveland, Nov. 5.—Slightly more activity is noted in the plate market. Miscellaneous inquiries are out for stills, tanks and containers. A Detroit pipe line again is up, requiring two and one-half miles each of 54 and 66-inch plates, ½-inch thick, approxi-

mately 4500 tons. Cleveland has not yet bought its 3000-ton water line. Some activity in plates for locomotive boiler and fire box purposes is noted. An inquiry is out for 10 and 11-foot flanged and dished boiler heads, 100 to 150 tons. Plates still are 1.95c, Pittsburgh, but under pressure.

Chicago, Nov. 5.—Plate shipments again have declined, due in part to the further suspended pipe line welding operations in Milwaukee. Shipments to the Milwaukee fabricator during the peak of the season were 75,000 to 85,000 tons monthly. Plate mill operations have been reduced to about 80 per cent, while deliveries can be made within three weeks on most sections. A proportion of spot tonnage can be accommodated on current weekly schedules. Mills have booked no oil tank tonnage and none has come out in fresh inquiry. Indefinite reports are heard as to the programs in Oklahoma, but it is understood much tonnage will be required if drilling activities are allowed to proceed. The base price for plates is 2.00c, Chicago.

CONTRACTS PLACED

2000 tons, pipe line, between Portland and Salem, Oreg., to Steel Tank & Pipe Co.
550 tons, penstock, Lake Cushman project, Tacoma, Wash., to Commercial Boiler Works.
425 tons, five digesters, Olympic Forest Products Co., Port Angeles, Wash., to Commercial Boiler Works.
375 tons, drum gates, Lake Cushman project, Tacoma, Wash., to Commercial Boiler Works.
170 tons, digester, Crown Willamette Paper Co., Camas, Wash., to Willamette Iron & Steel Works.

CONTRACTS PENDING

4500 tons, two and one-half miles each 54 and 66-inch pipe for Detroit. Bids being considered.
3000 tons, 48 and 60-inch water pipe for city of Cleveland; to be considered by board of control, Nov. 6.
12,000 to 14,000 tons, two additional tankers for the Standard Transportation Co., a Standard Oil subsidiary, contemplated.
370 tons, Cedar River pipe line No. 2, Seattle. Bids Nov. 4.

Steel Plant Employment Reduced in September

Washington, Nov. 5.—Employment and payrolls in iron and steel plants in September fell off slightly compared with August, but in allied industries payrolls and employment increased, according to the bureau of labor statistics. Reports were received from 201 iron and steel plants which gave their August employment as 284,312, decreasing in September to 280,559, or 1.3 per cent. Their payrolls dropped from $9,338,191 to $9,085,329, or 1.7 per cent.

Reports from 150 machine tool plants gave their August employment as 41,418, increasing in September to 42,577, or 2.8 per cent. Their payrolls advanced from $1,325,898 to $1,387,294, or 4.6 per cent.

Pipe

Cast Pipe Lags—Centrifugal Grade Fair—All Descriptions of Steel Pipe Slowing Up

MEAGER private business in cast pipe with dwindling municipal buying causes that market to lag. Awards are confined to 100 to 200-ton amounts. Centrifugal pipe is fair. Steel pipe business in general likewise is letting up. Line pipe projects materialize slowly. Newest inquiry involves 40,000 tons for California. Large diameter pipe is up at Detroit and Cleveland.

PIPE PRICES, PAGE 1198

Pittsburgh, Nov. 5.—Business in practically all descriptions of tubular products is declining. Merchant pipe shows its normal seasonal decrease in activity while mills, working off backlogs of large diameter line pipe, are adding but little of this material to their books. Activity in gas and oil line pipe normally declines with the approach of cold weather, it being difficult to lay lines in all but southern territories. Standard Oil Co. of California, however, contemplates a 300-mile line for that state, about 40,000 tons of steel. No additional lines have prospects of early closing. California and Oklahoma plan to restrict oil production this month. So far this has had but slight effect on pipe demand. More marked effects are looked for, however, in the near future. Mechanical tubing continues slow but locomotive tubing is active. Mill operations are off slightly at 65 to 70 per cent.

Boston, Nov. 5.—Private sources furnish the bulk of present pipe business. Brisk demand at New York last week served to hold prices firm throughout New England. Associated Gas & Electric Co. plans a 25-mile line between Sherborn and Shrewsbury, Mass., and welded steel pipe may be used. Price firmness is indicated by prices openly quoted; on 4-inch, $44.10 to $45.10 delivered at common Boston freight rate points; 6 to 12-inch, $40.10 to $41.10; 16 to 20-inch, $39.60 with a $4 differential on class A and gas pipe.

New York, Nov. 5.—An inquiry for 2500 tons of buttweld pipe from an oil company is outstanding. Deliveries on this type of pipe are available in a week. Lapweld pipe deliveries are three to four weeks deferred. Action is expected tomorrow on 6000 tons of 60-inch pipe for the Newark water department, previously noted as pending. Bids also will be opened tomorrow on 3000 tons of 60-inch steel pipe for the New York water department and on 175 tons of 6 to 36-inch cast pipe. The situation in cast pipe has been exceedingly sluggish, with pending elections at many cities having had a depressing effect on municipal buying.

Cleveland, Nov. 5.—Lapweld pipe mills still have good backlogs to work off, although shipments are so heavy they are dwindling fast. Buttweld shipments are fair, jobber orders having been meager for the past few weeks. On an average basis of around 70 per cent, mills can make immediate shipment of the latter but customers have to wait for lapweld. Detroit's 54 and 66-inch pipe line, involving 4500 tons again is up. Cleveland has not yet purchased its 3000 tons of 48 and 60-inch.

Chicago, Nov. 5.—Iron pressure pipe producers are able to maintain barely more than 50 per cent operations with the small amount of spot and carload tonnage being booked. No developments have appeared as to winter buying programs by municipalities. Public utility work is light. Saginaw, Mich., is in the market for 200 tons of 6 to 24-inch pipe. Riverside, Ill., will receive revised bids Nov. 12 on 100 tons of 6 and 8-inch pipe recently reported awarded. Carload prices are reported steady on the basis of $37 to $38, Birmingham.

Birmingham, Ala., Nov. 5.—Slow markets are noted by cast iron pressure pipe makers. Unfilled tonnage is being worked down rapidly. Plants will continue active production on stock. Quotations still are $37 to $38 on 6-7 inch and over sizes. Centrifugal pipe predominates in sales. Two or three specifications of more than ordinary size are reported for the near future.

CONTRACTS PENDING

200 tons, 6 to 24-inch pressure pipe for Saginaw, Mich.
175 tons, 6 to 36-inch cast pipe, water department, New York. Bids opened Nov. 6.
150 tons, 6 and 8-inch for Massachusetts, Westfield, Mass., unit, to Warren Foundry & Pipe Co.
100 tons, United States government arsenal, Watertown, Mass., pipe fittings; bids open Nov. 7.
100 tons, 6 and 8-inch pipe for Riverside, Ill.; revised bids Nov. 12.

STEEL PIPE

40,000 tons, 300 miles, for Standard Oil Co. of California; oil line contemplated.
4500 tons, water line for Detroit, 2½ miles each of 54 and 66-inch; project revived.
3000 tons, water line for Cleveland, 5 miles 48 and 60-inch; early action expected.
Unstated tonnage, 25-mile gas line from Sherborn to Shrewsbury, Mass., for Associated Gas & Electric Co.

It is believed that the three oldest pieces of wrought iron in existence are a sickle blade found by Belzoni under the base of a sphinx in Karnae, near Thebes, Egypt; a blade, probably 5000 years old, found by Colonel Vyse

in one of the pyramids; and a portion of a crosscut saw which must have been made earlier than 88 B.C.

Tin Plate

Price Announcement Deferred—Operations at Lowest Point of Year

TIN PLATE PRICES, PAGE 1198

Pittsburgh, Nov. 5.—Tin plate production continues to decline, with the current rate at 60 to 70 per cent. The present average marks about the lowest level of the year as specifications are expected the middle of this month for January requirements. January ordinarily is not one of the most active months of the year but shows improvement over the fourth quarter activity. Present indications are that consumers' stocks of tin plate at the first of the year will not be larger than normal. Final figures on vegetable packs are lacking, although gains are looked for compared with figures a year ago. Announcement of the tin plate price for the first half of 1930 is deferred. The market continues $5.35 per 100-pound base box, Pittsburgh.

Iron Ore

New Shipping Record for Season Now Uncertain

IRON ORE PRICES, PAGE 1198

Cleveland, Nov. 5.—Breaking of the 1916 shipping record for Lake Superior iron ore this season is by no means a certainty. Bad weather held vessels in port and they are just resuming regular schedules. It appears that the lake movement this month will amount to 3,500,000 to 4,000,000 tons, which added to the 61,253,954 tons up to Nov. 1, would top the 1916 lake vessel movement. In 1916, however, nearly 2,000,000 tons of ore was moved all-rail. Shipping ore to St. Louis by way of the water route to Chicago, and the closing of the Mayville furnaces, have cut heavily into all rail shipments. The Lake Superior Iron Ore association reports October vessel shipments as 7,989,127, a decrease of 464,825 tons from October, 1928. Following are shipments to Nov. 1:

Port and dock	To Nov. 1, 1928	To Nov. 1, 1929	Percentage of total
ESCANABA:			
C. & N. W.	3,489,946	4,079,850	6.66
C. M. & St. P.	1,445,773	1,694,203	2.77
MARQUETTE:			
D. S. S. & A.	710,025	793,118	1.30
L. S. & I.	2,391,707	3,297,261	5.38
ASHLAND:			
C. & N. W.	4,294,264	5,025,528	8.20
Soo Line	1,661,451	2,172,451	3.55
SUPERIOR:			
Great Nor.	12,615,224	16,380,358	26.74
Soo Line	960,088	1,280,789	2.09
Nor. Pac.	718,371	815,337	1.33
DULUTH:			
D. M. & N.	16,093,816	19,466,145	31.78
TWO HARBORS:			
D. & I. R.	5,339,266	6,248,914	10.20
Total	49,719,931	61,253,954	100.00
1929 Increase		11,534,023	23.20

Sheets

Market Is Quieter—Automotive Demand Still Dormant—Sales of Other Grades Light

DEMAND for sheets continues to subside, the automotive industry continuing out of the market, and other consumers buying sparingly. Slight improvement is noted in orders for freight cars and agricultural implements. Backlogs have dropped to the lowest point of the year, in sharp contrast with conditions a month ago. Prices are easier, though quotably unchanged.

SHEET PRICES, PAGE 1197

Pittsburgh, Nov. 5.—The trend in sheet production and demand continues downward although buying by two consumers has improved. More tonnage is being received for work on freight cars and the agricultural implement industry is specifying in slightly better volume. The situation in the automotive industry is less cheerful. Automobile resumption is looked for before the end of the year. October shipments ran ahead of incoming business and backlogs are scarce on practically all descriptions. Unfilled orders in blue annealed are declining, now amounting to about two weeks' work. Operations are down to 65 to 70 per cent. Prices are not strong but are quotably unchanged at 2.75c, Pittsburgh, for black sheets, 3.50c for galvanized and 2.35c for blue annealed. Reports are heard of 3.40c on galvanized, but instances of this figure to buyers other than jobbers are infrequent. Automobile sheets are nominal at 4.00c.

New York, Nov. 5.—Galvanized sheets still are quoted 3.50c, Pittsburgh, with shading down to 3.40c. Black sheets are easy but unchanged at 2.75c, Pittsburgh, and blue annealed plates 2.10c to 2.20c. Blue annealed sheets are unchanged at 2.35c. One inquiry is out for 500 tons of black sheets for a stove manufacturer with headquarters in this city. Deliveries are easier.

Philadelphia, Nov. 5.—Demand for sheets has tapered off and mills need tonnage for immediate rolling. Jobbers and consumers are taking less tonnage of all grades. The price situation generally has not changed, although in certain quarters the tendency is a little easier. On blue annealed sheets fully 95 per cent of the buyers continue to pay the full prices, 2.20c, base, Pittsburgh, for No. 10 gage, and 2.35c for No. 13 gage. Ordinary one-pass, cold-rolled black sheets continue 2.75c, base, Pittsburgh, subject to occasional shading, particularly for highly finished sheets. Galvanized sheets continue 3.40c to 3.50c, base, Pittsburgh.

Buffalo, Nov. 5.—Sheets are being subjected to heavy price pressure, especially black. Prices are down at least $4 from the top point of the year. Unfilled tonnage is dropping steadily.

Youngstown, O., Nov. 5.—Sheet mill schedules are comprised mainly of current specifications, backlogs having practically disappeared. District sheet mill operations now average 66 per cent of capacity, some plants being idle. No tonnage is being produced in anticipation of customers' requirements. Prices have not been tested since business started to decline, and sellers are trying to avoid sharp competition. Black sheets are quoted 2.75c; blue annealed 2.35c and galvanized 3.50c, base, Pittsburgh. Demand from the automotive industry continues to shrink. This grade is held at 4.00c.

Cleveland, Nov. 5.—Sheet sales are small. Some customers have asked that tonnage they expected to take in November be deferred until December. Resistance against regularly quoted prices on black, galvanized, blue annealed and full finished is increasing. Demand for metal furniture sheets which held up, now is receding. Makers still quote 4.10c, base, Pittsburgh. Electrical sheets also have suffered a setback, after experiencing a record year.

Chicago, Nov. 5.—Backlogs in all grades of sheets have declined. Sales are for spot delivery and tonnage is sought for November and December. Backlogs of blue annealed now are two to three weeks, against 12 weeks two months ago. Operations are down a few points to 75 to 80 per cent. Further weakness is reported in southern markets in black and galvanized, but mills in this district are quoting the recent prevailing prices. Mill quotations are 2.95c to 3.05c for No. 24 black, 3.60c to 3.70c for No. 24 galvanized, and 2.45c for No. 13 blue annealed.

Cincinnati, Nov. 5.—District sheet mills are pressed for deliveries, with current bookings chiefly to meet present needs. Demand for galvanized sheets is holding up well, but makers say prices are not high enough to yield adequate profit.

St. Louis, Nov. 5.—Producers and distributors of sheets report conditions satisfactory. A substantial volume of new business has been booked and specifications are above expectations. Demand for galvanized material is brisk, with purchasing in the South particularly active. The leading local producer of sheets reports 100 per cent operations in the blue annealed, black, and galvanized departments, with deliveries four weeks deferred. Prices continue to hold steady.

Structural Shapes

Atlantic Seaboard Prolific Source—West Furnishing Fair Share—Bridge Work Important—Price Trend Is Downward

METROPOLITAN New York continues to furnish the bulk of structural awards and inquiries. While apartments, lofts and other types of buildings predominate, bridge work is important in both the East and West. Tacoma, Wash., awarded a 2400-ton viaduct. Seattle has a 14,000-ton bridge up. Bridge items are noted in Oklahoma, Wyoming, Colorado, Nebraska, as well as numerous eastern states. A tower building let in New York takes 9000 tons while an apartment just awarded there involves 5100 tons. A clubhouse at Cleveland will take 6000 or 7000 tons and a hotel at Akron, O., involves 4000 to 5000 tons. A department store let at Akron calls for 3300 tons. Some eastern buyers have cancelled in some directions in order to get better deliveries in others.

STRUCTURAL SHAPE PRICES, PAGE 1197

Chicago, Nov. 5.—Miscellaneous orders for light shapes are in fair volume, but tonnage backlogs are lacking, particularly in building lines. Specifications are aided by the incoming tonnage for the Santa Fe cars. Bridge work continues in important volume. About 2000 tons has appeared for bridge projects in Oklahoma and at Cheyenne, Wyo. A 700-ton bridge job has been awarded at Lamar, Colo., and a viaduct, calling for 400 tons, has been awarded in Omaha. The range of 2.00c to 2.05c, Chicago. prevails for spot and future business.

Worcester, Mass., Nov. 5.—The structural market is weak. Most business involves small lots. Employment soon will go on short time. An award of 106 tons for a theater in Athol, Mass., has been announced.

Boston, Nov. 5.—Appearance of several structural inquiries gives rise to the hope that a general improvement in the financial situation will release more projects. One job, 146 tons, was let here but 1000 tons for a bridge at Providence, R. I., 300 tons for an administration building at Wellesley, Mass., and a 118-ton theater at Gardner, Mass., are pending. These are expected to be awarded in the immediate future.

New York, Nov. 5.—While fresh inquiry is moderate, a heavy tonnage of structural business is pending and buying is of good proportions. A leading award involves 9000 tons for the Salmon Towers building. A fair amount of bridge work is noted. Shapes continue at a minimum of 2.145c, New York.

Philadelphia, Nov. 5.—Structural shape sales show some increase the past week and eastern mills are operating at 80 to 90 per cent of capacity. In some instances, consumers have cancelled orders with some mills on account of difficulty in obtaining desired shipments have placed them elsewhere. The general level of standard shapes continues at 1.90c to 2.00c, base, eastern mills, with lower prices applying on desirable tonnages. In a general way the price level is somewhat easy.

Pittsburgh, Nov. 5.—The structural shape market maintains a fair degree of activity in this district despite the fact that the bulk of awards and inquiry is made up of small lots. Recent lettings include 650 tons for the Falk chemical laboratory, University of Pittsburgh, and 300 tons for a high school addition. Operations of local fabricators are seasonally large but backlogs are off considerably from the midsummer rate. Plain material continues 1.90c to 1.95c, Pittsburgh.

Cleveland, Nov. 5.—Structural shape awards are more active in adjacent territory than they are locally. The Polsky department store, Akron, O., taking 3300 tons, went to the Burger Iron Co. Numerous projects are up in this immediate vicinity, however, which brighten prospects considerably. Deliveries to jobs are greatly interfered with by the filled up condition of fabricators, some having enough work on hand and ahead to last throughout the year. Mills report a continuance of active specifications, although amounts generally are small. Some pressure is being exerted to uncover a lower price than the 1.95c, Pittsburgh, price generally named on ordinary tonnages.

Birmingham, Ala., Nov. 5.—Fabricating shops are busy and erecting field forces are active. Contracts book presage continued activity through the year. Several jobs of fair size are in sight. Numerous small tonnage contracts are being received.

CONTRACTS PLACED

9000 tons, Salmon Towers, Forty-second street and Fifth avenue, New York, to McClintic-Marshall Co.

5100 tons, apartment for the H. R. H. Construction Co., Central park, west, between Seventy-fourth and Seventy-fifth streets, New York, to Harris Structural Steel Co.

3300 tons, Polsky department store, Akron, O., to Burger Iron Co.

2400 tons, East Eleventh street viaduct, Tacoma, Wash.; general contract to Lindstrom & Feigenson; subcontract for steel to Poole & McGonigle.

1710 tons, Union Industrial bank, Flint, Mich., to Flint Structural Steel Co., through Realty Construction Co., general contractor; Smith, Hinchman & Grylls, architects and engineers. Previously credited in error to American Bridge Co.

1600 tons, Henry avenue bridge, Philadelphia, to Phoenix Bridge Co., through Francis A. Canuso, general contractor.

1600 tons, Girard college high school building, Philadelphia, to Bethlehem Construction Co.

1500 tons, state farm bureau building, Harrisburg, Pa., to Shoemaker Bridge Co.

1300 tons, radio tower, South Dartmouth, Mass., to International Derrick & Equipment Co.

1200 tons, municipal highway bridge, Boston, to Boston Bridge Works, and McClintic-Marshall Co.

1000 tons, school No. 105, Bronx, New York, to Easton Structural Steel Co.

900 Tons, foundation and first floor, Lawson Memorial Y. M. C. A., Chicago, to American Bridge Co.

880 tons, railroad viaduct, Atlanta, Ga., to Virginia Bridge & Iron Co.

800 tons, office addition, California bank, 625 South Spring street, Los Angeles, to Consolidated Steel Corp.

700 tons, bridge, Lamar, Colo., to Minneapolis-Moline Power Equipment Co.

700 tons, bridge for the New York Rapid Transit Co., East Fourteenth street, Brooklyn, N. Y., to American Bridge Co.

650 tons, addition, Electric Auto-Lite Co., Toledo, O., to Whitehead & Kales Co.

650 tons, field house, University of Wisconsin, Madison, Wis., to Mississippi Valley Structural Steel Co.

650 tons, Falk chemical laboratory, University of Pittsburgh, to American Bridge Co.

625 tons, bridge, Bremerton, Wash., to Wallace Bridge & Structural Steel Co., through Union Bridge Co., general contractor.

550 tons, plant, Checker Cab Co., Kalamazoo, Mich., to Indiana Bridge Co.

500 tons, Thirteenth street viaduct, Union Pacific railroad, Omaha, Nebr., to American Bridge Co.

470 tons, bridge, Jewett City, Conn., to American Bridge Co.

450 tons, Stanley film exchange building, Philadelphia, to the Cantley Co.

410 tons, telephone exchange building, Kokomo, Ind., to Insley Mfg. Co., through Leslie Colvin, general contractor.

400 tons, state bridge in Connecticut, to American Bridge Co.

335 tons, apartment, Union near Leavenworth street, San Francisco, to McClintic-Marshall Co.

300 tons, Taylor Allderdice high school addition, Pittsburgh, to John Eichleay Jr. Co.

300 tons, building, American Rolling Mill Co., Ashland, Ky., to unstated fabricator.

300 tons, pulp mill, Olympic Forest Products Co., Port Angeles, Wash., to Isaacson Iron Works.

256 tons, buildings, American Telephone & Telegraph Co., West Haven, Conn., to Bethlehem Fabricators Inc.

170 tons, acid building, Standard Oil Co. of Indiana, Whiting, Ind., to Vierling Steel Works.

150 tons, plant addition, Columbia Metal Stamping & Die Co., Cleveland, to Truscon Steel

Awards Compared

	Tons
Awards this week	40,552
Awards last week	41,386
Awards two weeks ago	67,751
Awards this week in 1928	56,645
Average weekly awards, 1928	39,082
Average weekly awards, 1929	41,888
Average weekly awards, Oct.	42,695
Total awards to date, 1928	1,765,817
Total awards to date, 1929	1,884,999

Co., through J. L. Hunting Co., general contractor.

146 tons, health unit, Boston, to New England Structural Steel Co.

125 tons, plant, Haynes Stellite Co., Kokomo, Ind., to Indiana Bridge Co.

120 tons, highway bridge, Northwest Electric Co., Woodland, Wash., to Wallace Bridge & Structural Steel Co.

109 tons, two bridges, San Lorenzo and Pancherico creeks, Salinas, Calif., to unstated company.

106 tons, theater, Athol, Mass., to Eastern Bridge & Structural Co.

100 tons, skating rink, Thirteenth and Grove streets, Oakland, Calif., to Judson-Pacific Co.

100 tons or more, Swan Island airport, Portland, Oreg., to Poole & McGonigle.

100 tons, building, Du Pont Engineering Co., Belle, W. Va., to Virginia Bridge & Iron Co.

100 tons, garage, Ralph Sollitt & Son, South Bend, Ind., to Indiana Bridge Co.

100 tons, industrial building, Ferro-Concrete Construction Co., Cincinnati, to Indiana Bridge Co.

100 tons, plant addition, Euclid Crane & Hoist Co., Cleveland, to Truscon Steel Co.

100 tons, plant, Globe Brick Co., Kenilworth, W. Va., to Austin Co.

100 tons, Big Four station, Linndale, O., to Cleveland General Construction Co.

CONTRACTS PENDING

14,000 tons, Lake Union bridge, Aurora avenue, Seattle. Bids shortly.

6000 to 7000 tons, National Town and Country Club building, Euclid avenue, Cleveland; Thompson-Starrett Co., Chicago, general contractor, says plans now yet out; ground broken Nov. 4.

4000 to 5000 tons Mayflower hotel, Akron, O. Bids in.

3000 tons, Ridge avenue subway section, Philadelphia, to be readvertised.

2000 tons, Plaza subway section, Philadelphia; general contract to Underpinning & Foundation Co.

2000 tons, apartment East Seventy-eighth street, New York.

1800 tons, 16-story building for Fred T. Ley, Third avenue and Seventy-eighth street, New York.

1600 tons, 15-story loft for R. E. Schiff, 331-39 West Thirty-seventh street, New York.

1300 tons, trade school, East Sixty-sixth street, New York, William Crawford, general contractor.

1300 tons, 5-story building for *New York Times*, Pacific and Deane streets, Brooklyn, N. Y. Bids all in.

1200 tons highway bridge, Cheyenne, Wyo.

1000 tons, Crawford street city bridge, Providence, R. I.

900 tons, bridge over Arkansas river at Sand Springs, Okla.

800 tons, addition to Newton high school, Elmhurst, Long Island, N. Y., Royal Rice Co. general contractor.

750 tons, (estimated) Cleveland Orchestra building; Crowell & Little Construction Co., general contractor; plans not yet out.

500 tons, bridge work for Boston & Maine railroad.

500 tons, 10-story apartment, 25 East Thirty-first street, New York.

400 tons, school No. 199, Brooklyn, N. Y.

350 tons, addition, Lebanon Steel Foundry Co., Lebanon, Pa. Bids in.

350 tons, plant, Horace E. Dodge Boat & Plane Corp., Newport News, Va. Originally expected to take 500 tons. Bids closed.

300 tons, hospital, addition to Southern Pacific Co., San Francisco. Bids shortly.

300 tons, Wellesley college administrative building, Wellesly, Mass.

250 tons, East Seventy-ninth street bridge, Cleveland, Nickel Plate railroad. Bids in.

200 tons, three state bridges in Pennsylvania.

200 tons, bridge for New York Central railroad at Nyack, N. Y.

200 to 300 tons, plant, Dill Mfg. Co., Cleveland; DeHamel Construction Co., general contractor; plans about ready.

200 tons, addition to St. Peter's hospital, Staten Island, N. Y.

175 tons, hangar, Alameda, Calif. Bids being received.

150 tons, additional floor, Union Trust building, Cleveland, for stock exchange headquarters.

150 tons, hangar, Richmond Heights airport, near Cleveland, Curtiss Flying Service Inc., 39 Broadway, New York; general contract to A. M. Higley, Plymouth building, Cleveland.

125 tons, pavillion, Manhattan beach, Brooklyn, N. Y.

118 tons, theater building, Gardner, Mass.

Concrete Bars

West Is Bright Spot—4700 Tons Let In Five Jobs—Prices Are Weakening

LETTINGS, particularly in the West are active, despite the approach of colder weather, which always acts as a deterrent on concrete projects. One job awarded in Texas takes 1700 tons. San Francisco reports two jobs let, totaling 1550 tons. A Seattle aqueduct involves 800 tons and a Chicago armory, 350 tons. Inquiries are less numerous. Prices show a tendency to weaken.

REINFORCING BAR PRICES, PAGE 1197

Chicago, Nov. 5.—Reinforcing bar orders are fairly active and inquiry shows more life in the immediate Chicago district than does structural steel. About 450 tons of the 1000 tons of bars required for the state hospitals at Dunning, Elgin and Lincoln, Ill., has been purchased. Some tonnage for the state reformatory addition at Pontiac, Ill., also is included in current state work. A field artillery armory in Chicago took 660 tons. Billet bar prices are decidedly irregular. Bids contain quotations as low as 2.00c.

Boston, Nov. 5.—Three or four fairly good concrete bar projects are pending. These seem slow to reach fulfillment. The only open project worth while involves 300 tons for a city bridge at Providence, R. I. Total tonnage disposed of last week was not more than 600 tons, led by 300 tons for the hotel here.

Buffalo, Nov. 5.—A Buffalo producer sold 135 tons of reinforcing bars for an Elmira, N. Y., school project. A Buffalo contractor, low bidder on the Dansville-Geneseo road, will buy 460 tons of mesh if awarded the contract. Prices as low as 2.265c, Buffalo, are reported to have been made on larger reinforcing bar tonnages for shipment direct from steelworks.

Philadelphia, Nov. 5.—Kalman Steel Co. booked 350 tons of concrete reinforcing bars for the new farm bureau building at Harrisburg, Pa. Otherwise current bookings are small. The usual price continues 2.30c, base, Pittsburgh, equivalent to 2.62c, delivered Philadelphia, on bars cut to length, but occasionally this figure is shaded on substantial business.

Pittsburgh, Nov. 5.—October shipments of concrete reinforcing bars were heavy but incoming business showed the usual season decrease. Inquiry is less active and awards in this district are limited to lots of less than 100 tons. Prices are easy but are quotably unchanged at 2.30c, Pittsburgh, for cut lengths and 2.05c for stock lengths.

Cleveland, Nov. 5.—While 15 to 25-ton jobs predominate, a few larger ones have been placed. Included are 275 tons for a film exchange building, 150 tons for work in the Cleveland terminal and 100 tons for the St. Alexis hospital addition. Buyers of attractive tonnages claim to be able to close at concessions under the figures generally quoted. All pending work involves limited tonnages.

Awards Compared

	Tons
Awards this week	6,771
Awards last week	3,341
Awards two weeks ago	9,850
Awards this week in 1928	3,346
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,161
Average weekly awards, Oct.	5,969
Total awards to date, 1928	300,147
Total awards to date, 1929	277,224

CONTRACTS PLACED

1700 tons, barracks at Randolph field, San Antonio, Tex., to Laclede Steel Co.

1000 tons, warehouse and garage, Pacific Gas & Electric Co., San Francisco, to Pacific Coast Steel Co.

800 tons, Lake Youngs aqueduct, Seattle, to Northwest Steel Rolling Mills.

550 tons, pier No. 1, San Francisco, to Pacific Coast Steel Co.

450 tons, part of tonnage for state hospital additions at Dunning, Elgin and Lincoln, Ill., to Inland Steel Co.

350 tons, farm bureau building, Harrisburg, Pa., to Kalman Steel Co.

350 tons, 124th Field Artillery armory, Chicago, to Olney J. Dean & Co.

300 tons, hotel, Boston, to Northern Steel Co.

275 tons, film exchange building, Warner Bros. Pictures, Inc., Cleveland, to Paterson-Leitch Co., through Hunkin-Conkey Construction Co., general contractor.

250 tons, building, National Biscuit Co., Newark, N. J., to White Construction Co.

200 tons, East Eleventh street viaduct, Tacoma, Wash., to Lindstrom & Feigenson.

155 tons, Lake Cushman surge tanks and penstock, to Northwest Steel Rolling Mills.

150 tons, plant, Electric Auto Lite Co., Toledo, O., to Hausman Steel Co., through H. J. Spilker Co., general contractor.

150 tons, theater, Stockton, Calif., to Truscon Steel Co.

150 tons, station platform work, Cleveland Union Terminals Co., Cleveland, to Truscon Steel Co., through Bates & Rogers Construction Co., general contractor.

141 tons, industrial building at Chicago, the Norton Co., Worcester, Mass., to Concrete Engineering Co.

135 tons, school, Elmira, N. Y., to Kalman Steel Co.

110 tons, Burroughs school and Old Ladies' home, Toledo, O., to Hausman Steel Co., through H. J. Berkebile and Carl Ruch, respectively general contractors.

100 tons, waterworks, Kankakee, Ill., to Hausman Steel Co., through Burny Construction Co., general contractor.

100 tons, apartment building, Racine, Wis., to Calumet Steel Co.

100 tons, repeater station, American Telephone & Telegraph Co., Attica, O., and convent, Sylvania, O., through C. B. Hersh and H. J. Berkebile, respectively, general contractors to Hausman Steel Co.

100 tons, branch library, Chicago, to Concrete Engineering Co.

100 tons, addition to St. Alexis hospital, Cleveland, to Bourne-Fuller Co.

(*Concluded on Page* 1208)

Rails, Cars

Rail Activity Pronounced—Car Inquiries Increase—Rock Island Wants 5000—410 Engines Up

RAILROAD equipment markets all are charged with activity. Southern Pacific's inquiry for 122,000 tons leads fresh rail inquiry and more inquiries are expected. Freight car orders will exceed 100,000 for the year. Rock Island wants 5000 and Missouri Pacific 2301. Recent car lettings profit western mills to the full 200,000 tons of steel. More than 400 locomotives pending.

RAILROAD TRACK PRICES, PAGE 1198

Chicago, Nov. 5.—Rail and car equipment markets again are active. Southern Pacific's inquiry for 122,000 tons leads. This exceeds by far its 1928 orders. Western and southern mills received the orders for the 61,000 tons authorized by Missouri Pacific. This was reported in IRON TRADE REVIEW of Sept. 26. The portion of this tonnage for autumn shipment has already been scheduled with the mills. A fair percentage of western rails is yet to be placed for 1930, including 40,000 to 50,000 tons for Chicago & North Western, and unstated amounts for several others, including Denver & Rio Grande. Southern Pacific's order may soon be placed also. Rail mills continue at about 80 per cent, with no immediate plans for increasing. This compares with about 50 per cent last year. Several large track fastenings inquiries are expected soon.

More than 82,000 standard equipment freight cars, and a total of 84,740 passenger and freight cars have been awarded this year. All indications point to the 100,000-freight car mark being passed before Dec. 31. Cars actively pending and cars placed on order during the recent buying movement will put about 175,000 to 200,000 tons of finished steel on the books of steel rolling mills in the West. Specifications now are being received by mills for about 75,000 to 80,000 tons of steel for the 5000 Santa Fe cars. The 3800 freight cars for the St. Louis-San Francisco still are pending. Chicago, Burlington & Quincy will take action soon on 600 freight cars. These are in addition to the Chicago, Rock Island & Pacific inquiry for 5000 cars. Other roads expected to place heavy car orders later are Missouri-Kansas-Texas, Illinois Central, New York Central, and Missouri Pacific for additional cars.

New York, Nov. 5.—Locomotive demand has taken an impressive spurt, with fresh inquiries involving more than 250 locomotives. Three inquiries out here call for 95 and the Chesapeake & Ohio is reported to have 135 under contemplation, although actual specifications have not been issued. Car buying in the local district is spotty. Substantial inquiries are pending so that improvement is expected soon.

Philadelphia, Nov. 5.—Locomotive inquiry has improved. The list includes 40 for Rock Island, 30 for St. Louis-San Francisco, 20 for Chicago, Burlington & Quincy, and an indefinite number, estimated at 30, for Missouri Pacific. These are in addition to 130 for Erie, 135 for Chesapeake & Ohio, and 25 for Wabash.

Pittsburgh, Nov. 5.—Additional business is lacking in awards of rails and fastenings although a few roads have yet to place their annual requirements. An inquiry from the Erie railroad for 100 to 130 locomotives is expected to be followed by some car business. Baltimore & Ohio's inquiry for track material also has yet to make its appearance while some of the smaller roads in this district have not entered the market. October proved a slightly better month in general business in fastenings than was anticipated, comparing favorably with September. Light rail demand also held to about the rate of the preceding month.

St. Louis, Nov. 5.—President L. W. Baldwin of the Missouri Pacific has authorized the purchase of equipment and material estimated to cost approximately $16,000,000. More than $6,000,000 of this is for 61,000 tons of 110-pound rail and fastenings, tie plates, anchor bars and other material, exclusive of ties and ballast. The new rail will be laid on 375 miles of the system. Contemplated purchases include: Five large mountain type locomotives, at an estimated cost of $2,750,000; 25 freight locomotives; 1250 50-ton box cars and 1000 70-ton hoppers, estimated to cost about $5,750,000; 10 all-steel parlor coaches, six dining-parlor cars, three dining club cars, 35 steel underframe cabooses and other equipment valued at $1,356,250.

CAR ORDERS PLACED

Baltimore & Ohio, 50 passenger coaches, to Pullman Car & Mfg. Corp.
Chicago & North Western, 100 steel caboose underframes, to American Car & Foundry Co.
Delaware & Hudson, two steel mail and baggage cars, to American Car & Foundry Co.
Delaware, Lackawanna & Western, one postal car to American Car & Foundry Co.
Transcontinental Oil Co., 100 tank cars, to American Car & Foundry Co.
United Fruit Co., 100 banana cars and 80 extra superstructures, to Magor Car Corp.
Virginia-Carolina Chemical Corp., one tank car, to General American Tank Car Corp.

LOCOMOTIVE ORDERS PLACED

Nashville, Chattanooga & St. Louis, five, to American Locomotive Co.
Newburgh & South Shore, one switch engine, to Baldwin Locomotive Works.
Paracuti, Estrado de Ferro, Brazil, one locomotive, to Baldwin Locomotive Works.
Sierra Railway of California, one locomotive, to American Locomotive Co.

CAR ORDERS PENDING

Chicago, Rock Island & Pacific, 5000 freight cars, including 2000 50-ton box, 1000 70-ton gondolas, 1000 40-foot automobile and 500 50-foot automobile cars, 250 stock cars, and 250 flats.
Ducktown Chemical & Iron Co., three 40- ton ore cars.
Missouri Pacific, 1000 70-ton steel hopper cars; 1250 55-ton box cars; six dining-pullman and three dining-club cars; 35 steel underframe caboose cars; 10 all-steel coaches, and miscellaneous lots of repair equipment.
Wabash, three baggage and mail cars.

LOCOMOTIVE ORDERS PENDING

Chesapeake & Ohio, 135, reported contemplated.
Chicago, Burlington & Quincy, 29 locomotives.
Chicago, Rock Island & Pacific, 40 locomotives.
Erie, 100 to 130 locomotives.
Missouri Pacific, 25 freight locomotives and five mountain type passenger locomotives.
St. Louis-San Francisco, 30 locomotives.
Wabash, 25 locomotives.

RAIL ORDERS PENDING

Southern Pacific, 122,000 tons.

Concrete Bar Awards

(*Concluded from Page* 1207)

100 tons, foundry, Warren Foundry & Pipe Co., Everett, Mass., to Barker Steel Co.
100 tons, state highway construction, Washington, to Northwest Steel Rolling Mills.
100 tons, building, Firestone Tire & Rubber Co., Seattle, to Northwest Steel Rolling Mills.
100 tons or more, Swan Island airport, Portland, Oreg., to Mercer Steel Co.

CONTRACTS PENDING

465 tons, (mesh) for Dansville-Geneseo, N. Y., highway. Canty, O'Neill & Candell Inc., Buffalo, low bidder.
400 tons, veterans' home, Yountville, Calif. Bids Nov. 19.
300 tons, Crawford street city bridge, Providence, R. I.
180 tons, Plaza subway section, Philadelphia; general contract to Underpinning & Foundation Co.
147 tons, bridge over San Gabriel river, Sacramento, Calif. Bids received.
147 tons, 16-inch class B and 8-inch class B or 150, East Bay Municipal Utility district, Oakland, Calif. Bids Nov. 13.
112 tons, 4 to 8-inch class B pipe, improvement Esteele street, San Diego, Calif. General contract to R. E. Hazard Contracting Co.
100 tons or more, Monticello junior high school, Cleveland Heights, O. General contract awarded Gilchrist Construction Co.
100 tons, 4 to 10-inch class B, improvement Olive street, Los Angeles. General contract to P. P. Janich.
Unstated tonnage, addition to Pontiac, Ill., state reformatory.

Electrochemical Society Selects St. Louis

Making its first visit to St. Louis, the American Eectrochemical society will hold its spring meeting in that city, May 29-31. Headquarters will be at the Hotel Coronado. The main papers session will be devoted to hydroelectrometallurgy. Other sessions will deal with refractories, rectifiers and electrodeposition. Colin G. Fink, Columbia university, New York, is secretary of the society.

The Market Section

Wire

Jobbers Taking Better Tonnage While Dealers Buy Little—Nails Continue to Drag

NEED for wire by manufacturers is being affected by lack of need for springs in the automotive trade. Dealers' orders have fallen off appreciably as a result. At the same time jobbers are taking larger requirements. Shipments in October were slightly below those of last year. Prices have not affected the volume of buying. No further weakening is being met.

WIRE PRICES, PAGE 1198

Pittsburgh, Nov. 5.—October shipments of wire products were fairly close to the September figure but fell slightly below the activity of a year ago. Backlogs are small and new business is light. Restricted automobile production is affecting demand for manufacturers' wire largely due to lighter commitments by bolt and nut makers. Nails are slow although no more so than formerly. Recent price changes have had no material effect on business and new quotations slowly are being established. The 2.40c. Pittsburgh, price for plain wire is steady and on wire nails $2.40 to $2.50 is holding in most districts. Activity in barbed wire and fencing is tapering. Woven wire fencing holds at $65.

Worcester, Mass., Nov. 5.—Not much change is apparent in the wire market although some slowing down has been reported. In addition to the recession traceable to the automobile industry, building requirements are slackening and will soon make themselves felt in production totals. Plain bright wire to dealers is 2.55c to 2.65c, Worcester.

Cleveland, Nov. 5.—Wire and wire nail demand fails to improve. Jobbers' needs have been met for the time being and the turnover is small. Makers seem determined to avoid the disastrously low prices that have prevailed in recent weeks but do not look for a really stabilized market until early 1930. In the meantime they quote 2.40c, Cleveland-Pittsburgh, on plain wire and $2.40 on nails.

Chicago, Nov. 5.—Dealer sales of common wire products are reported slow, while moderate gains are being shown in jobber orders. Manufacturers' wire sales have been reduced by the lack of spring wire orders from the automotive trade. Wire mill operations are spotty, some departments being down to about 50 per cent. Western mills report the $1 differential over the Pittsburgh-Cleveland-Ironton base quotations is being maintained. Jobber quotation for wire nails is $2.45, Chicago or western mills, and manufacturers' wire is 2.45c, western base. Annealed wire is quoted 2.60c to large jobbers in carload lots.

Production Index Rises

Washington, Nov. 5.—Iron and steel index number for September was 139, compared with 143 for August and 128 for September of last year, taking 1923-1925 at 100, according to the department of commerce.

September nonferrous metals index number was 124, compared with 123 for August and 117 for September last year.

Iron and steel unfilled orders index for September was 79, compared with 76 for August and 75 for September last year.

Cold Finished Steel

Reduction of $2 per ton Made at All Producing Centers

COLD FINISHED PRICES, PAGE 1198

Pittsburgh, Nov. 5.—Cold-finished bar producers have announced a reduction of $2 a ton on bars and shafting, bringing bars to 2.20c, Pittsburgh, Chicago, Buffalo and Cleveland, and turned and ground shafting to 2.55c to 3.00c.

Cleveland, Nov. 5.—Lack of sustained demand has caused cold-finished bars to weaken $2 per ton. The price now is 2.20c at Cleveland, Pittsburgh, Buffalo and Chicago. Small amounts only are being purchased or specified and automotive demand particularly is light.

Chicago, Nov. 5.—Cold-rolled and drawn bars and shafting now are being quoted 2.20c, base, Chicago, Buffalo, Cleveland and Pittsburgh, a decline of $2 a ton. Ground shafting prices remain unchanged. Backlogs are light, but demand from other than the automotive sources is steady.

Strip

Strip Users Outside Automotive Field Take Fair Tonnage—Prices Are Holding Well

EXCEPT for lack of orders from automotive users demand for strip steel is moderate, general users taking almost as much as usual. But automotive needs make so large a proportion of total demand that its absence is felt keenly and production is much curtailed. Pressure against prices continues but current quotations are being held fairly well.

STRIP PRICES, PAGE 1198

Pittsburgh, Nov. 5.—Strip business from consumers other than automobile builders and parts makers is in steady volume but tonnage from the automotive industry as a whole remains light. Strip makers are pessimistic over any substantial upturn in demand from the latter group, feeling that recent stock market developments will further restrict motor car production the remainder of the year. Strip mill operations hold at 50 per cent although some interests are a few points above that figure this week. Prices continue under pressure but current quotations in general are fairly steady. Hot strip is 1.90c and 2.00c for the two sizes, with cold-rolled strip 2.75c.

Worcester, Mass., Nov. 5.—Strip steel production is experiencing its seasonal recession, which, however, has been entirely normal. With prices quoted at 2.90c to 3.00c, most contracts are being taken at nearer 2.90c.

New York, Nov. 5.—Although demand for strip steel continues sluggish, deliveries are fairly steady at two to three weeks on hot-rolled strip and three weeks on cold rolled. Hot-rolled strip appears firm at 1.90c to 2.00c, Pittsburgh, depending upon width. Cold-rolled material is easy at 2.75c, Pittsburgh, with occasional concessions of $1 a ton noted.

Philadelphia, Nov. 5.—In hot-rolled strip steel the current prices continue 1.90c, base, Pittsburgh, on widths 6 inches to 24 inches, and 2.00c for under 6 inches; there have been certain exceptions to these prices but concessions have been made only to large consumers.

Cleveland, Nov. 5.—Hot and cold strip makers are being asked to hold back shipment of material scheduled for November. It will not be accepted until December or January. Orders are meager, representing material absolutely needed. Operations are 40 and 50 per cent and some cold mills are worse off than that, where they cater almost exclusively to the automotive trade. As yet 1.90c, Pittsburgh, represents the minimum quoted on wide hot strips in this locality, with 2.00c applying on narrow, for which a fair demand still exists. On cold 2.75c, Cleveland-Pittsburgh base, continues to be named. Some producers are encountering considerable pressure for lower prices.

Nonferrous Metals

Copper and Aluminum Prices Continue Firm While Lead, Zinc, Tin, and Antimony Decline—Securities a Factor

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Oct. 30	18.00	18.10	17.25	41.25	41.75	6.75	6.55	6.60	23.90	8.70	35.00
Oct. 31	18.00	18.10	17.25	41.87½	42.25	6.50	6.35	6.50	23.90	8.62½	35.00
Nov. 1	18.00	18.10	17.25	40.75	41.12½	6.50	6.35	6.50	23.90	8.62½	35.00
Nov. 4	18.00	18.10	17.25	40.25	40.62½	6.50	6.35	6.50	23.90	8.62½	35.00

Nov. 5—Election Day.

NEW YORK, Nov. 5.—Copper and aluminum prices have held steady in the face of light demand and declining quotations in other nonferrous metals this week. The recent debacle of securities has been reflected in nonferrous metals as in many other commodities.

Consumers of metals who have been buying only light tonnages for early needs during past weeks saw additional reasons for continued and even greater caution in the collapse of securities and the resultant uncertainty in business activity. This factor contributed to the weakness of lead, zinc, tin, and antimony prices. Falling quotations in London also affected conditions here. Markets at New York were closed on Tuesday due to election day.

Copper—Despite lagging demand, electrolytic copper prices have held steady and producers apparently unchanged in their price policies. Domestic buying has been light to moderate. Export sales picked up somewhat over the last weekend. Reports of very limited quantities of copper in the outside market at shaded prices have been heard. Copper wire mills continue to operate at more than normal rates. Brass mills have further reduced their operations but schedules compare well with those of preceding years. Shipments of copper into consumption continue large and this fact has contributed to the steadiness of the market as a whole. Casting copper was quoted slightly easy.

Tin—This market resisted to a certain extent the depressive effects of the stock market but prices finally were forced down under pressure of a weak market abroad. Demand has been very limited and confusion has prevailed from time to time as to the exact position of the market. London prices have declined.

Zinc—Successive declines in prime western prices have brought the level of quotations to 20 points under prices prevailing 10 days ago. This weakness in zinc was due in large part to the threat of competition from imported metal which was being quoted below New York parity in London. Buying has lagged for some time past, but on Monday the market appeared more stable with prime western at 6.50c, East St. Louis. Because of large stocks, lack of demand, depressed prices, and uncertainty as to future developments, talk of curtailed production as a necessity has circulated. High grade zinc has held remarkably steady at 8.00c, delivered. Zinc ore price has declined $2 a ton on all grades at Joplin.

Lead—Spot metal prices dropped 35 points in a week. Consumer interest has continued absent from the market although fair lots were sold on Monday for spot and November shipments. Rolled lead quotations have been marked off a half-cent while lead ore has fallen $7.50 a ton in the Tri-State district.

Antimony—Market is dull here, The Chinese market continues relatively firm but it is not known to what extent warfare in central part of China may interfere with movement of metal from that region.

Aluminum—Prices are steady but buying light.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ½c more)	9.25
Zinc sheet (100-pound base)	$10.50
Zinc strip (100-pound base)	$9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.75 to 12.25
Chicago	11.50 to 11.75
Cleveland	12.00 to 12.50
St. Louis	12.00 to 12.50
HEAVY YELLOW BRASS	
Cleveland	8.50 to 9.00
HEAVY COPPER AND WIRE	
New York	14.50 to 14.75
Boston	14.25 to 14.50
Chicago	13.00 to 13.50
Cleveland	14.00 to 14.50
St. Louis	11.50 to 12.00
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.50 to 12.75
Chicago	11.75 to 12.00
Cleveland	12.50 to 13.00
St. Louis	11.50 to 12.00
LIGHT BRASS	
Boston	6.75 to 7.00
Chicago	6.75 to 7.00
Cleveland	6.75 to 7.00
St. Louis	7.00 to 7.50
ZINC	
New York	3.25 to 3.50
Cleveland	3.00 to 3.50
St. Louis	3.50
ALUMINUM	
Clippings, Cleveland	16.50 to 17.00
Borings, Cleveland	9.50 to 10.00
Cast, Cleveland	12.00 to 12.50
Cast, Boston	10.50 to 11.00
Cast, St. Louis	12.25 to 12.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.00 to 16.25

Coke By-Products

Export Prices Lowest of Year—Buying Naphthalene

New York, Nov. 5.—While domestic prices on sulphate of ammonia are nominally unchanged at $2.15 to $2.25, producers' plants, export prices continue to sink and are now at the lowest point this year. This weakness in the foreign market is attributed largely to sharp competition between German and English producers. Foreign buying here, however, has been relatively light, with inquiry spotty. Domestic demand continues sluggish, with little improvement expected much before December, when fertilizer interests are likely to begin rounding out their spring needs.

Seasonal contracting for naphthalene now is beginning to appear, with most sellers quoting flakes at 4½ cents per pound in car lots, producers' plants, and balls at 5½ cents. On lesser quantities, the market is from 1 cent to 2 cents higher, the top prices applying to quite small lots.

Coke By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.30
Commercial xylol	0.30

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.16 to 0.17

Per Pound at Producers' Plants

Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.15 to $2.25

Warehouse

Tonnage Receipts Materially Curtailed—Sheets Down $4 at Philadelphia—Boston Wire Products Up

PRICE revisions are receiving uppermost consideration in different warehouse markets. Sheets declined $4 at Philadelphia, cold drawn bars are down there $2 and are expected to decline in other districts. Nails recovered one-quarter of the recent decline at Boston. Demand in general is sustained at better than the October, 1928, rate but, except at Philadelphia, is below the September movement.

Boston—Jobbers have increased nails 5 cents, recovering one-fourth of the recent 20-cent cut. This makes the stock price $3.25 per keg, base. Carlot shipments from mills carry a $2.50 price, while less car lots are billed at $2.75. Staples and other wire products also advanced 5 cents. Buying of all iron and steel is limited but the agregate tonnage is seasonally high. Keen competition makes for an unsettled price situation.

New York—Jobbers in cold drawn bars are expecting to revise their prices shortly to conform with the recent $2 mill reduction. Early action also is considered likely in some quarters in revising bar extras to conform with the mill revision around the first of last month. Shearing extras on cold rolled strip have now been generally adopted by jobbers here. The situation with regard to cold rolled products generally has been reasonably satisfactory to warehouse sellers. Business this month has started off fairly well. Exceptionally good buying of structurals is noted.

Buffalo—Material curtailment of business is noted in iron and steel out of warehouses. Mills again are seeking smaller tonnages and general demand has declined. Business however, is not much below seasonal averages.

St. Louis—Business with iron and steel jobbers continues somewhat spotty, but better on the average than two weeks ago. The improvement noted is mainly in orders from the south and for seasonal goods. A brisk call for boiler tubing is noted. Sheets, notably galvanized and blue annealed, are reported active.

Philadelphia—Jobbers reduced black and galvanized sheets $4 per ton and cold-drawn bars $2. Black sheets now are 3.90c, base, delivered locally; galvanized sheets, 4.65c; cold-drawn bars 3.50c, base, on rounds and hexagons, and 4.00c, base, on flats and squares. Jobbers' sales in October were fully 25 per cent more than in September. Mills attribute this largely to the in-

(*Concluded on Page* 1212)

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl	2.46c
Los Angeles lcl	2.70c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York††‡	3.15c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	4.00c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.90c to 4.00c
Philadelphia*†	3.90c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.40c
Los Angeles	5.30c
New York	4.60c to 4.75c
Philadelphia*†	4.65c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.40c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons, squares	Flats, squares
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.50c	4.00c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pounds lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time

Pacific Coast

Columbia Purchase Interests Steel Trade—Northwest Activity Continues

PURCHASE of the Columbia Steel Corp. by the United States Steel Corp. is causing much speculation among steel producers and users on the Coast. Washington and Oregon continue to find activity, both in inquiry and lettings, with evidence of strong buying for some weeks forward. Pipe buying is slack, a seasonal condition. A cargo of Indian iron has been distributed.

San Francisco, Nov. 2.—(*By Air Mail*)—Interest continues to center around absorption of the Columbia Steel Corp. by the United States Steel Corp. While it is too early to determine just what effect this sale will have upon the steel trade on the Pacific Coast, it is expected that greater stability in market conditions will result. Reports from the east state that the Corporation will enlarge the Pittsburgh plant of the Columbia Steel Corp. to double its present capacity.

Demand for steel continues well sustained and awards in most lines compared favorably with the weekly average for the year, cast iron pipe bookings, however, being exceptionally small.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Pig Iron and Coke

One large importer has just unloaded in various Pacific ports 2000 tons of Indian iron to be applied against contracts placed some time ago. Of this total approximately 600 tons was taken by foundries in the Bay district, 100 tons by Seattle consumers and 1300 tons by Los Angeles users. Another shipment of 1700 tons of Indian iron is scheduled to arrive during the latter part of this month.

Bars, Plates and Shapes

A number of large reinforcing steel bar contracts were reported during the week and totaled 3674 tons, compared with the weekly average of the year of 1647 tons. The Pacific Coast Steel Co. secured 1000 tons for a warehouse in San Francisco and 550 tons for a theater in Stockton, Calif. The Truscon Steel Co. secured 150 tons for a theatre in Stockton, Calif. Pending business includes 400 tons for a Veterans Home at Yountville, Calif., and 147 tons for a bridge over the San Gabriel River near Los Angeles. Out-of-stock prices remain unchanged at 2.30c, base, on carload lots and at 2.60c on smaller tonnages. In Los Angeles the out-of-stock prices are $2 a ton higher.

Over 2000 tons of structural shapes was reported placed during the week. The Consolidated Steel Corp. took 800 tons for an addition to the Bank of California building. Los Angeles, and McClintic-Marshall Co. secured 335 tons for an apartment on Union street, San Francisco. Bids are being taken on 175 tons for a hangar in Alameda. Pending business includes 300 tons for an addition to the Southern Pacific hospital, San Francisco.

Other Finished Material

Fall activity in the cast iron pipe market has not yet begun and awards this week were limited to two projects involving 100 tons or more. San Diego placed 112 tons for the improvement of Estelle street and Los Angeles awarded 100 tons for the improvement of Olive street. Pending business calls for approximately 3600 tons. The only new inquiry of the week involved 147 tons for the East Bay municipal utility district, Oakland. The Santa Fe Pipe & Supply Co. took 243 tons of 1 to 8-inch black and galvanized standard pipe for Los Angeles. No large pipe line inquiries are before the trade.

Seattle Buying Steady

Seattle, Oct. 30—Pacific Northwest interest in iron and steel products continues unabated, lettings being well above normal. Awards this week totaled nearly 7000 tons, while additional contracts of importance are pending.

Steel mills have several important contracts on hand and although specifications for reinforcing bars are of less importance than last month, the aggregate of orders in car lots being received is considerable and is furnishing sufficient work to insure unchanged operations in the meantime. Reinforcing awards this week exceeded 1500 tons and included 800 tons for the Lake Youngs aqueduct, Seattle, to the Northwest Steel Rolling mills. The same plant also booked 155 tons for the Lake Cushman surge tank and penstock, 100 tons for the Firestone Tire Co. warehouse, Seattle, and 100 tons for state highway work. Pacific Coast Steel Co. took 40 tons for the Montgomery, Ward & Co. building, Everett, Wash. Lindstrom & Feigenson, Portland, have the contract for the East Eleventh street bridge, Tacoma, involving 200 tons of reinforcing, while an unstated tonnage of reinforcing, steel doors and sash was taken by the Mercer Steel Co., for the Swan Island airport, Portland.

Additional Contracts Let

The Pacific Bridge Co., Portland, obtained the general contract for about 21,500 feet of 36 to 48-inch steel pipe for Section 5 of the Sultan water project at Everett on a bid of $345,616. It is understood the pipe will be furnished by the Steel Tank & Pipe Co., 1400 tons being involved. Plate jobs pending include an unstated tonnage for a 10-mile pipe line at Port Angeles, unstated tonnage for four tanks for the Sunset Pacific Oil Co. at Seattle, and Cedar river pipe line No. 2, Seattle, involving 3300 feet of 51½-inch steel pipe, bids Nov. 4.

Structural awards were heavier than normal this week and totaled close to 4000 tons. The largest award, involving 2400 tons for the East Eleventh street viaduct, Tacoma, went to Lindstrom & Feigenson, Portland, on a low bid of $434,596. It is reported that the steel will be fabricated by Poole & McGonigle. Wallace Bridge & Structural Steel Co. closed for 625 tons for the Bremerton bridge and 120 tons for a 170-foot steel highway space at Woodland, Wash., for the Northwest Electric Co. Isaacson Iron Works booked 300 tons for the roof structure of the plant of the Olympic Forest Products Co. building at Port Angeles, Wash. Poole & McGonigle will furnish the structural steel required for the Swan Island airport, Portland, tonnage unstated. Puget Sound Bridge & Dredging Co. is low bidder for the Fourteenth avenue South bridge, Seattle, 1100 tons of shapes, but the award will not be announced for a week. Pierce county has voted funds for a new bridge across the Stuck river at Sumner.

Warehouse

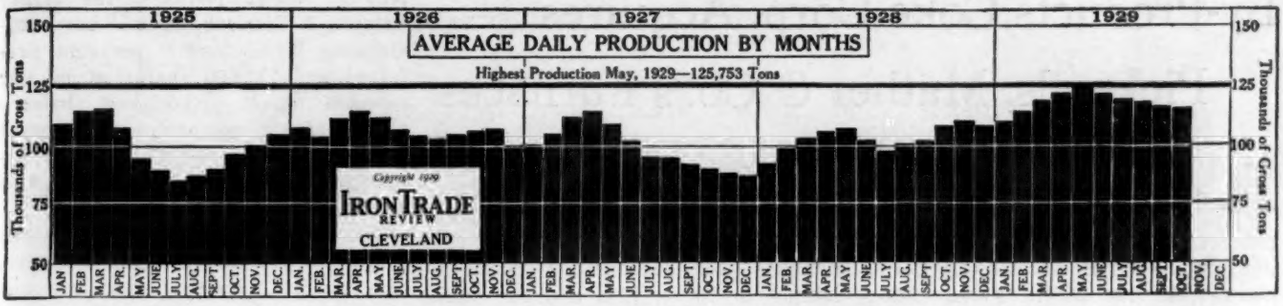
(*Concluded from Page* 1211)

creased number of carload sales by jobbers for direct mill shipment.

Pittsburgh—Warehouse sales are less active. Business compares less favorably with the rate of a month ago with October of last year. The recent decline in buying has been fairly general both as to products and consumers. Prices continue steady although occasional shading is met.

Cleveland—Business is less brisk. Some jobbers report a definite slowing down; others a continuance of fair demand. One leading interest sold more in October than in September and this rate of demand has continued so far this month. One factor in retarding jobber sales is the tendency of mills to accept increasingly small orders. Prices are unchanged, warehouses not yet reflecting the $2 reduction in cold-finished bars.

Cincinnati—A lull in demand was noted by warehouses last week. October bookings, although higher than October in 1928, did not reach expectation. Prices remained unchanged.



October Iron Total Off, but Record

OCTOBER in pig iron production was noteworthy both for the record-breaking tonnage and the unusual number of shifts in furnaces. With a daily rate of 115,747 gross tons the month fell slightly under the 116,548 tons of September, but exceeded the 108,824 tons for last October and by a wide margin surpassed the previous October record—113,167 tons in 1916.

During the month five merchant stacks were blown in and none was blown out. Three steelworks stacks were lighted but seven were dropped, making a net gain of one stack active Oct. 31 compared with Sept. 30. The total number active Oct. 31 was 205. Two steelworks stacks which were blown out Nov. 1 are not credited to the October situation.

In point of tonnage, the longer month overcame the slight decline in the daily rate and gave October a total of 3,588,146 tons, compared with 3,496,454 tons in September. In October, 1928, only 3,373,539 tons was made. The 10-month total for 1929 stands at 36,250,846 tons, also a record; in the first ten months of 1928 output was 31,157,301 tons. In all of 1928 output was only 37,831,741 tons, scarcely exceeding the 10-month figure for 1929.

The five merchant stacks lighted in October include one each by the Republic Iron & Steel Co. in Ohio, Youngstown Sheet & Tube Co. at South Chicago, Witherbee-Sherman Co. at Port Henry, N. Y., Pickands, Mather & Co. at Toledo, O., and Pulaski Iron Co. at Pulaski, Va. The Tennessee Coal, Iron & Railroad Co. lighted two steelworks stacks and the Colorado Fuel & Iron Co. one steelworks stack. The steelworks stacks dropped during the month included five by the Carnegie Steel Co., all in Pennsylvania, one by the Illinois Steel Co. at Gary, and one by the Jones & Laughlin Steel Corp.

MONTHLY PRODUCTION

	1929	1928	1927	1926
Jan.	3,433,028	2,855,515	3,101,346	3,319,789
Feb.	3,218,376	2,898,668	2,940,604	2,923,850
Mar.	3,709,518	3,199,175	3,482,107	3,458,171
April	3,663,167	3,181,975	3,424,377	3,438,805
May	3,898,344	3,292,790	3,391,067	3,477,820
June	3,715,104	3,082,340	3,089,726	3,232,478
July	3,782,511	3,072,711	2,954,625	3,224,663
Aug.	3,746,198	3,136,995	2,950,674	3,200,723
Sept.	3,496,454	3,063,593	2,782,500	3,163,269
Oct.	3,588,146	3,373,539	2,812,015	3,334,206
Total 10 mos.	36,250,846	31,157,301	30,929,041	32,773,774
Nov.		3,304,656	2,661,863	3,237,992
Dec.		3,369,784	2,698,208	3,089,175
Total		37,831,741	36,289,112	39,100,941

Rate of Operation
(Relation of Production to Capacity)

	1929†	1928*	1927‡
January	80.3	67.8	71.2
February	83.3	73.6	74.7
March	86.7	76.1	79.8
April	88.7	78.0	81.2
May	91.1	78.3	77.7
June	89.8	76.0	73.2
July	88.4	73.2	67.7
August	87.3	74.4	67.6
September	84.5	75.2	65.9
October	83.9	79.3	64.5

†Based on capacity of 50,367,665 tons as of Dec. 31, 1928. *Based on capacity of 49,605,720 tons. ‡Based on capacity of 51,379,400 tons. Capacities computed by American Iron and Steel institute.

AVERAGE DAILY PRODUCTION

	1929	1928	1927	1926	1925
Jan.	110,742	92,113	100,043	107,039	108,781
Feb.	114,942	99,954	105,021	104,423	114,788
Mar.	119,662	103,199	112,326	111,554	115,207
Apr.	122,106	106,066	114,146	114,627	107,041
May	125,753	106,219	109,388	112,187	94,642
June	123,837	102,745	102,991	107,749	89,301
July	122,016	99,120	95,311	104,021	85,976
Aug.	120,845	101,193	95,183	103,249	87,328
Sept.	116,548	102,120	92,750	105,442	90,862
Oct.	115,747	108,824	90,710	107,555	97,351
Nov.		110,155	88,728	107,933	100,775
Dec.		108,702	87,039	99,651	104,808
Ave.	119,246	103,365	99,422	107,126	99,645

DIVISION OF PRODUCTION

1928	Merchant	Non-merchant	Spiegel and ferro-manganese
Jan.	649,654	2,205,861	32,510
Feb.	579,298	2,319,370	27,376
Mar.	597,106	2,602,069	34,587
Apr.	586,045	2,595,930	33,599
May	596,664	2,696,126	38,466
June	589,127	2,493,213	38,628
July	584,611	2,488,100	42,230
Aug.	563,510	2,573,485	33,585
Sept.	580,344	2,483,249	31,170
Oct.	643,043	2,730,496	33,519
Total 10 mos.	5,969,402	25,187,899	345,670
Nov.	632,869	2,671,787	38,811
Dec.	686,431	2,683,353	34,541
Total	7,288,702	30,543,039	419,022
1929			
Jan.	744,448	2,688,580	37,210
Feb.	665,648	2,552,728	34,419
Mar.	740,966	2,968,552	37,997
Apr.	740,311	2,922,856	44,406
May	772,014	3,126,330	35,598
June	716,715	2,998,389	43,218
July	741,622	3,040,889	31,137
Aug.	682,048	3,064,150	40,527
Sept.	643,197	2,853,257	38,038
October	739,060	2,849,086	39,640
Total 10 mos.	7,186,029	29,064,817	382,190

OCTOBER PIG IRON PRODUCTION

	No. in blast last day of month Oct.	Sept.	Total tonnage made Merchant	Nonmerchant	—Totals— October	September
Ohio	46	45	149,466	715,114	864,580	829,377
Pennsylvania	69	75	168,506	1,011,206	1,179,712	1,200,101
Alabama	16	13	104,978	114,013	218,991	182,587
New York	16	15	102,799	125,836	228,635	221,068
Illinois	18	17	125,463	220,873	346,336	344,433
Colorado	4	3				
Indiana	14	15				
Maryland	5	5	2,126	493,159	495,285	481,483
Virginia	2	1				
Wisconsin	0	0				
Kentucky	2	2				
Massachusetts	1	1				
Tennessee	2	2	33,137	91,382	124,519	114,763
Utah	1	1				
West Virginia	3	3				
Michigan	4	4				
Minnesota	2	2				
Missouri	0	0	40,695	49,753	90,448	84,604
New Jersey	0	0				
Texas	0	0				
Spiegel and ferro—all states	....	....	11,890	27,750	39,640	38,038
Total	205	204	739,060	2,849,086	3,588,146	3,496,454

By-Products Coke Corp. Acquires Pickands, Mather & Co.'s Furnaces

ANOTHER merger of importance in the iron and steel industry of the Middle West has been practically consummated in the acquisition by the By-Products Coke Corp., Chicago, of the Zenith Furnace Co., Duluth; the Toledo Furnace Co., Toledo, O., and Perry Iron Co., Erie, Pa., control of which has been held by Pickands, Mather & Co., Cleveland.

The sale includes properties valued at approximately $40,000,000, whose chief interests are making merchant pig iron and supplying gas to municipalities and manufacturing interests. It is subject to confirmation by some of the companies involved, but all details are expected to be completed in about 30 days.

Pickands, Mather & Co. will continue as sales agents for the Toledo and Perry companies, while Pickands, Brown & Co., Chicago, will remain as agents for the Zenith company, the two Federal stacks of the By-Products Coke Corp., at South Chicago, and two Iroquois stacks of the Youngstown Sheet & Tube Co., at South Chicago. The interests of these companies have been closely allied for some years. By-Products corporation will also acquire a substantial interest in Lake Superior iron ore mines operated by Pickands, Mather.

The Zenith Furnace Co. was organized in 1902 to take over the West Duluth Furnace Co. It has one blast furnace stack of 300 tons daily capacity, while its coke oven capacity was considerably enlarged in the past two years, principally to fill a contract for supplying Duluth, Superior and nearby communities with gas. Its capital consists of $2,250,000 par $100 stock, and $3,000,000 funded debt, of which $2,500,000 sinking fund 5½ per cent bonds were offered last year at par. Its resources as of Dec. 31, 1928, were $6,306,417.

The Toledo company has two furnaces on the Maumee river at Toledo, with daily capacity of 1200 tons of pig iron, by-product coke ovens and a benzol plant. It supplies Toledo with gas. The company is capitalized at $7,000,000. H. G. Dalton, a partner in Pickands, Mather & Co., is president of the Toledo company. He and Elton Hoyt II, a partner in Pickands, Mather, and Fayette Brown, president, Harvey H. Brown & Co., Cleveland, builders of industrial equipment, are directors of By-Products corporation.

The Perry Iron Co. has one blast furnace and a battery of coke ovens. One of its chief interests has been the supplying of gas to Erie. The company was acquired by Pickands, Mather & Co. in 1913 and the plant has been considerably improved, especially in its coke oven department in recent years.

The By-Products corporation's two Federal stacks have an annual capacity of 300,000 tons of pig iron, which with the 650,000 tons represented by Zenith, Toledo and Perry will put the corporation in position to merchandise approximately 1,000,000 tons of pig iron annually. Its connection with Pickands, Mather assures it of an abundant supply of iron ore, while it controls extensive coal lands in Kentucky and West Virginia. It operates 110 Becker and 120 Solvay ovens at South Chicago, and sells its entire gas output, amounting to more than 28,000,000 cubic feet annually, to the Peoples Gas Light & Coke Co., Chicago. It owns the entire capital stock of the Calumet, Hammond & Southwestern railroad. Its resources as of Dec. 31, 1928, amounted to $22,856,660. Its capital stock has been increased recently from 800,000 to 2,500,000 shares of no par common stock, 1,200,000 of which are to be used in the deal just announced. Stock of the corporation has been selling around $34.

Cleveland Bolt and Nut Makers Merge

Cleveland, Nov. 5.—Plans for the merger of Lake Erie Bolt & Nut Co. and Lamson & Sessions Co. were approved by directors of the respective companies Tuesday, according to an announcement by Norris J. Clark, president of the Lake Erie company, and George S. Case, chairman of Lamson & Sessions Co. The proposal is subject to the approval of the stockholders.

Lamson & Sessions Co., according to the merger terms, will pay a cash dividend of $1 a share on its present capital, payable to stockholders of record as of Nov. 20. It will then change its $25 par stock to no par and increase the authorized issue from 100,000 to 350,000. Of the new stock 172,500 shares will be issued to present holders and 70,000 shares to stockholders of the Lake Erie Bolt & Nut Co. On completion of the merger Lamson & Sessions Co. will have outstanding $904,500 of 7 per cent preferred and 242,500 shares of no par common stock. Combined balance sheets of the companies are around $10,000,000 as a result of recent acquisitions. Annual sales are also about $10,000,000.

The Lamson & Sessions Co., was organized 64 years ago as a partnership at Mt. Carmel, Conn., and was moved here in 1869. The Lake Erie Bolt & Nut Co. has been established here for more than 75 years and recently acquired the American Bolt Co., Birmingham, Ala., largest manufacturer of bolts and nuts in the South. The executive personnel will remain the same.

To Provide Instruction in Enameling

A two-week course of instruction in porcelain enameling of sheet metal and cast iron will be conducted by the Ferro Enameling Co., Cleveland, Dec. 2-14. The course will be under the direction of J. E. Hansen, former research fellow at Mellon institute and now research engineer for the company, and the enrollment will be limited. Details of the course can be secured by addressing the Ferro Enameling Co.

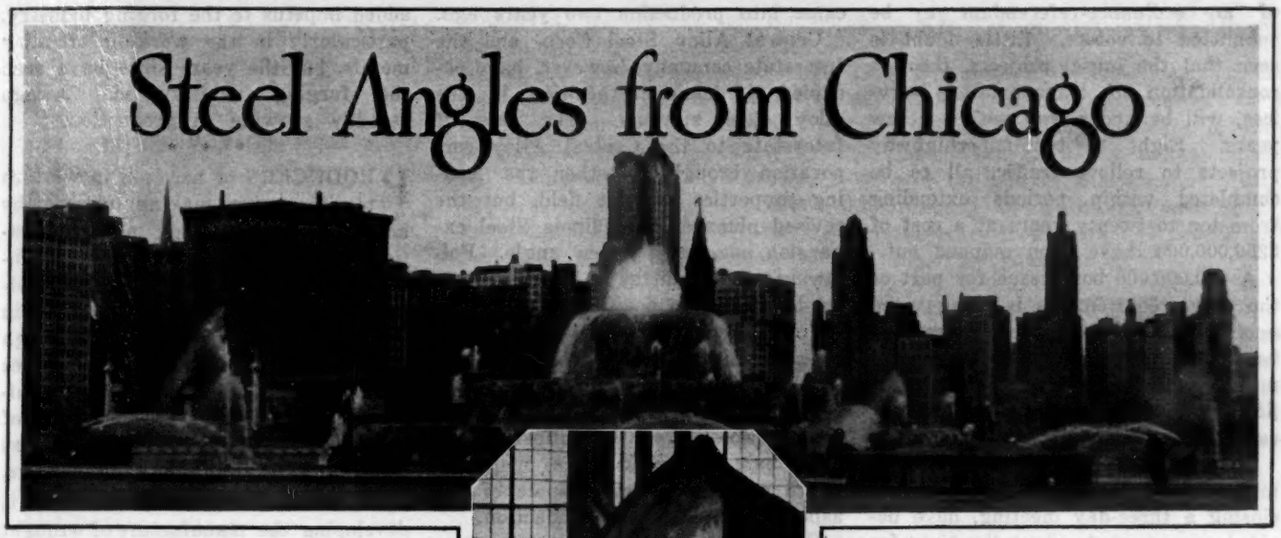
Enameled Ware Declines

Washington, Nov. 5.—Shipments of enameled ware in September declined sharply from August and were also somewhat lower than September of last year, according to the department of commerce. A comparison of the nine months with the same period last year, however, shows a gain. Monthly comparisons follow:

	In Dozens			
1928	Total	White	Gray	Colored
Sept.	352,484	172,127	130,337	50,020
Total (9 mo.)	3,123,160	1,440,750	1,125,936	556,474
Oct.	417,387	190,424	166,078	60,885
Nov.	328,875	139,197	123,850	65,828
Dec.	324,445	132,422	136,170	55,853
Total, 1928	4,191,761	1,900,275	1,552,034	739,452
1929				
Jan.	427,871	199,589	138,480	89,802
Feb.	390,577	178,589	131,206	80,782
March	449,425	183,191	166,368	99,866
April	463,577	194,971	137,764	130,842
May	352,885	156,195	109,165	87,525
June	337,375	147,285	89,919	100,171
July	290,532	127,058	*90,454	73,020
Sept.	338,169	143,505	101,127	93,537
Total (9 mo.)	3,435,573	1,484,352	1,083,241	867,980

Greenland in July imported from the United States 21 hoists, four elevators and seven conveyors, to the value of $20,817 and other conveying equipment valued at $24,745.

Steel Angles from Chicago



Chicago's Steel Growth Drawing New Industries

Impetus Given to Alloy Steel, Forging Output

Chicago, Nov. 5

TO WHAT extent the Chicago district, as a growing origin of steel supply, is attracting outside metal fabricating industries is moot, but each month brings unexpected prospects for equipment purchases as well as fresh activity in industrial realty. Recent announcement by the Illinois Steel Co. of its plan to add 2,500,000 tons to its annual capacity, or more than 25 per cent to the annual capacity of the district, illustrates something of the confidence shown in the future growth of the market territory seeking its supplies here.

The Chicago district's source of steel supply is becoming more dependable, and with the expansion of steelworks facilities a growing number of fabricating industries find it important to consider locating in Chicago territory to tap the consuming areas of the western and north Central markets.

Owing to the remarkable growth of radio parts and receiver manufacture alone, the consumption of fine copper wire has increased more than 50 per cent in the past two years and further mill facilities have been added at Kenosha, Wis. Other marketing of nonferrous metals has gained 10 to 20 per cent in that time also, it is estimated.

* * *

TRADE in western markets offers much of promise in metal working lines, despite apparent over-expansion in a few industries. It is noteworthy that the tendency to decentralize the industries of the strictly metropolitan area, which in the past year took a half dozen plants downstate into Illinois, north into Wisconsin or just across the Indiana state line, has been more than offset by the location of plants in Chicago from eastern territory in the desire to obtain lower transportation costs to help retain trade in western markets. Forty-nine new industries, with an investment of building, machinery and equipment of $9,000,000 located or began operations in southern Illinois in the past two years.

Interest is being shown in the coming biennial industrial census of Chicago, information for which now is being gathered by enumerators. Estimates are that a gain of 7 to 8 per cent will be shown in production and distribution of commodities since the preceding census in 1927.

Structural steel fabricating expansion in the past three or four years has taken a noteworthy stride. Some views are that this expansion may go too far, at least for building possibilities of the immediate future. Three or four structural fabricators have built new plants or have added facilities whereby output has been increased nearly 30 per cent. McClintic-Marshall Co. and Mississippi Valley Structural Steel Co. have built new plants. For at least four or five months of this year, building work let was not sufficient to keep more than 50 per cent of the district's fabricating capacity occupied.

* * *

MANY high hopes for the future in building work for the Chicago district bestir the imagination not only of the builders but also of those who produce and market steel and other building materials in this area. The superhighway and double deck street programs already mapped out, settlement of the city traction problem, which includes subway construction, and the 1933 Century of Progress, or world's fair exposition, offer fruitful prospects for the next few years, it is said.

The basic legal steps in the fight for subway construction, which early this year were authorized in enabling legislation by the Illinois legislature, are being pushed by the preparation

of an ordinance-referendum to be submitted to voters. Little doubt is seen that the initial projects, through consolidation of transportation services, will be under way within a few years. Eight to ten superhighway projects to relieve traffic, all to be completed within periods extending from ten to twenty years at a cost of $250,000,000, have been mapped out.

A $20,000,000 bond issue for part of the early requirements is being voted upon today. The whole program is based on estimates that 900,000 automobiles will be using the city's traffic lanes in 1950, a gain of 82 per cent from the present.

Members of the architectural commission of the 1933 exposition, just closing a three-day meeting, have decided upon next April as the time for construction to start, the administration and transport buildings to be the first structures to rise. Using Grant park as a forecourt, many of the structures will occupy islands along the lake front. The engineer-manager of the exposition points out that many of the engineering problems will require research and pioneering in new methods of construction, and specifications must include low cost of construction, safety, high fire resisting qualities, ease of demolition and high salvage value. Harvey Wiley Corbett, New York architect, head of the architects' commission, states that the commission will be able to use new building materials and new forms of construction in such an effective way that they will be just as valuable to the future development of American cities as was the architectural note of the Chicago exposition of 1893.

* * *

WHILE most types of building work fell far below last year, and were disappointing in comparison with the eastern building activity, industrial building and highway and railroad bridge work forged ahead. The structural steel for the Illinois Steel Co. plants proposed for Gary and South works will require 45,000 to 55,000 tons.

On the heels of the purchase of Interstate Iron & Steel Co. by Central Alloy Steel Corp. has come news of the further expansion plans of Illinois Steel Co. properties in the Chicago district, which include a new alloy steel bar mill at Gary.

Illinois Steel Co. operated its first electric furnaces during the war for the manufacture of ordnance equipment and ammunition, and thence it was a step to the production of alloy steel bars. A new 12 and 16-inch alloy steel bar mill was built by that company at its South works and came into production two years ago.

Central Alloy Steel Corp. and the Interstate company, however, have occupied a dominant position in the alloy steel markets. The sale of Interstate to the Central Alloy corporation brought together the leading properties in that field, but the revised plans of the Illinois Steel expansion introduced a new angle. Following the Central Alloy-Interstate combination, the position of the units in the alloy steel field was regarded as predominant, and speculation was indulged in concerning the probable effect on the price structure. Within about two years, the Illinois Steel alloy bar mill may be in operation, which again will revise some of the aspects of alloy steel production.

Sale of the Interstate company was unexpected in the industry in the Chicago district. That company had just completed some rather extensive improvements including a 10-inch bar mill and new gas producing building. Interstate's open hearths also were augmented in the past year by an addition to the open-hearth building, which provided for another furnace.

Other recent improvements to Interstate's plants were an addition to the power house, and construction of various auxiliary works buildings. If the Donner Steel Co. also is merged with the Central Alloy corporation, as has been discussed, the combination will have three strategic positions in the alloy steel markets of the Middle West.

An interesting phase of the Interstate-Alloy Steel combination is that a possibility is seen of the production of stainless steel by that group.

* * *

STRIDES being made by the forging industry in the Chicago district are illustrated by the growth in the number of concerns and the facilities of these plants, particularly since the war. Eight larger forgings producers enjoy steady business, in addition to several companies whose output is on a smaller scale.

The forgers point out that the type of demand now is tending to include alloy and special steels to a greater extent than ever before. Orders for forged gears alone have grown to most important volume, and the forging of gear blanks is a leading activity of forging plants here.

At least one forgings producer is among the leaders in the automotive parts industry. Last spring an acute shortage of forging steels developed in this market, which had to be relieved by the movement of such grades from the East. The war gave added impetus to the forging industry, particularly in the working of alloy metals, but the years since have seen the forging industry at Chicago steadily growing in production.

* * *

PRODUCERS of bar iron in western territory are making noteworthy advances in developing new fabricating uses for their product. The substitution of steel in freight car building during war times has resulted in a restricted railroad outlet, although car buying still forms a chief source of demand. Railroads entering Chicago now take 2500 to 6500 tons of bar iron yearly, against as high as 15,000 tons annually in former years.

An Indiana bar mill, however, is developing the manufacture of wrought iron window frame sections, and expects to build an addition next spring to house that production. Some possibility is seen of the new production being located in the immediate Chicago district. This producer is a petitioner of the interstate commerce commission, for a modification of the commission's order placing higher rates upon iron and steel bars between certain Indiana points and Chicago, contending that the proposed increase from 13 cents to 20½ cents would shut out sale of its products in the Chicago market. The petition points out that there is no increase in the rates in the Chicago switching district, where competitors operate. The outcome of the modification petition may help determine the location of the new plant.

* * *

ELECTRICAL power in the generating stations of the Chicago industrial district has reached 2,034,450 horsepower with the installation of a 278,820-horsepower electric turbogenerator by the State Line Generating Co. at its station just east of the Illinois-Indiana state line and in the heart of the Gary-Indiana Harbor steel belt. Its power output is sold wholesale to companies serving the metropolitan Chicago area, delivery being made at the property line of the station, for the purchasers to distribute to their customers. Condensation of steam from the turbines takes 380,000 gallons of water each minute, the water being pumped from Lake Michigan and its temperature being raised 10 degrees before being returned to the lake almost instantly. The unit has a capacity more than twice that of any other in the Middle West. High voltage transmission lines interconnect the station with other power houses in the district, adding to what the late Charles P. Steinmetz termed "the hub of the world's greatest power pool."

Wheeling Steel Profits Exceed 1928

Profit of the Wheeling Steel Corp. from operations in the three months ended Sept. 30, 1929, after deducting repair and maintenance charges amounting to $1,514,616, was $3,287,092. Operating profit in the previous quarter was $3,810,604.

Net profit available for dividends as the result of third quarter operations was $1,775,381, equivalent to $2.80 a share on the common stock outstanding. Net for the three months ended June 30, 1929, was $2,342,294. In the September quarter last year net profit amounted to $1,408,669.

Wheeling Steel Corp's earnings for the first nine months of 1929 totaled $5,912,919, after depreciation charges and taxes, compared with $3,963,009 for the corresponding nine months of 1928. Third quarter operations added $1,775,381 to surplus, bringing the total surplus as of Sept. 30, 1929, to $16,561,226. Surplus on the corresponding date one year ago amounted to $13,013,112.

Electric Orders Record

Washington, Nov. 5.—Orders booked in the third quarter for electrical goods declined from the record high made in the second quarter, although establishing a record for the period, according to the department of commerce. Figures for the previous quarters follow:

Quarter	1927	1928	1929
1st	$235,883,303	$237,508,001	*$322,424,619
2nd	229,353,332	245,520,801	340,898,469
3rd	228,610,346	264,466,257	336,806,037
4th	232,877,670	282,226,449	.....
Total	926,724,651	1,029,721,508	.....

*Revised.

Starts Reclaiming Alloys

Central Alloy Steel Corp., Massillon. O., has started operation at its Canton, O., plant of a new electric induction reclaiming furnace, recently completed at a cost of $245,000. The equipment was made necessary by the expanding production of stainless steel. It will permit the reclaiming of stainless steel scrap, produced in the manufacturing process, without loss of chromium and nickel. Reclamation of valuable alloys has become a factor of increasing importance with the widening use of stainless steel.

Forged Tool Standards Now in Effect

Washington, Nov. 5.—Division of simplified practice of the bureau of standards, department of commerce, has announced that the revised simplified practice recommendation No. 17 on forged tools will be considered as effective from July 1, 1929. Signed acceptances from a sufficient number of manufacturers, distributors and users of forged tools to insure the general adoption of the revised simplification program, prompted this announcement. This simplified practice recommendation was instrumental in reducing the number of weights, sizes and types of forged tools from 665 to 369 or 44 per cent. Forged tool eye sizes also were reduced by the simplified practice recommendation from 120 to 10, or 91 per cent.

Slag Group Will Meet

Directors of the American Slag association will hold a meeting at the organization's headquarters in Cleveland, Nov. 22. The annual meeting will be held in Birmingham, Ala., in January or February, according to Secretary H. J. Love, 937 Leader building, Cleveland.

In 1928 the United States shipped to France air compressors to the value of $401,945 against a value of $299,795 in 1927. Shipments of pneumatic tools for the respective years were $166,804 against $131,885.

Senate Coalition To Try To Pass Tariff; House Reaction Doubtful

WASHINGTON, Nov. 5.—After expressions from leading republicans, democrats and progressives that the tariff bill was "dead", the senate has started on its grind to pass the bill, if possible by the middle of December, if not within the following two weeks.

Several propositions have been made on the floor to speed the work of the senate, such as the getting together of the democrats and progressives and submitting their suggestions to the republicans of the finance committee, with the idea of cutting out debate on certain paragraphs. However, to this time, no move has been forthcoming in that direction.

During the dark moments last week, when it looked like there was a possibility that the senate might adjourn and leave the bill to "die", Senator Reed, of Pennsylvania, in charge of the metals schedule, said that "the coalition has control and can write it to suit their program. This is conceded. But I for one will not agree to allow the bill to go through without adequate debate. I want an opportunity to defend the bill as reported by the finance committee. But even passage of a bill by the senate does not mean that we have a tariff law.

"It is my opinion that the house will never accept a bill sent to it by the senate and that the conferees will become deadlocked. I cannot see how the senate will rescind from its position on the flexible tariff clause; I doubt whether the house will agree to drop that provision. There will be several other things in addition to rates that will be almost unsurmountable between the house and the senate."

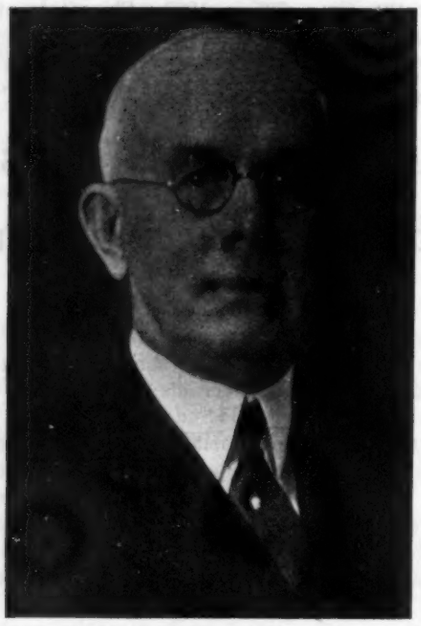
At one time last week there was considerable talk that the senate should adjourn Nov. 15 and forget the tariff bill. However, shortly after the plea sent to the senate by Presirent Hoover this idea was apparently given up. The President's statement, which did not receive any enthusiastic support from anyone in the senate, came following conferences which he had with a unmber of leading members of the senate. He was told, it is reported, by these leaders that the bill could be passed by the senate in two weeks if the members would get down to work. For this reason, he stated in his official pronouncement, that he hoped the senate would pass the bill inside of two weeks. With members in bad humor, this statement brought forth nothing but sarcastic remarks from the democrats and progressives.

"The President said", the official statement says, "as he has uniformly stated his position, that campaign promises should be carried out by which adequate protection should be given to agriculture and to the industries where the changes in economic situation demand their assistance. He stated that he could not believe and, therefore, would not admit that the United States Senate was unable to legislate and that the interests of the country required that legislation should be completed during the special session.

"He urged the republican leaders to get together and see if they could not expedite the early completion of the schedules and thus send the bill to the house within two weeks."

Industrial Men in the Day's News

Carl A. Johnson, New President, National Machine Tool Builders' Association



IF 35 YEARS' experience in the manufacture of machine tools means anything, the Tool Builders have made a fitting choice in naming him their chief.

STARTING with a shop broom, he gradually has risen to the high place he now occupies, his company employing 1000 workmen and his association comprising 144 member companies.

DURING the war, at the request of the government, he with his brother organized the Northwestern Ordnance Co.

ELECTION of Carl A. Johnson, president of the Gisholt Machine Co., Madison, Wis., to the presidency of the National Machine Tool Builders' association, as briefly noted in IRON TRADE REVIEW of Oct. 31, comes as a fitting tribute to his long and successful career in the machine tool industry. Like his immediate predecessor in that office, Henry Buker, Mr. Johnson has spent more than 35 years in the industry. All of that time he was with the one company. Moreover, he, like Mr. Buker, was technically trained before becoming affiliated with the industry and yet served his full apprenticeship course in the shop—in fact, began his training with the proverbial shop broom.

Mr. Johnson has been president of the Gisholt Machine Co., Madison, Wis., manufacturer of turret lathes, since 1908. He is the second son of John A. Johnson, founder of the Gisholt company. This company was organized in 1888 and grew out of the Fuller & Johnson Mfg. Co., that city. This latter company was devoted to the manufacture of agricultural equipment, being organized in 1880 with his father as president.

Mr. Johnson is one of four brothers, all at one time actively identified with the Gisholt company. Following a fundamental training, each developed along lines that later dovetailed remarkably in the direction of the company's business. Frederick, the eldest, was particularly interested in sales promotion. He died in 1908, while president of the company, but his acumen and energy are reflected in the affairs of the Gisholt organization to this day. Carl devoted his efforts largely to matters of business management and finance. Hobart S., now vice president, showed particular interest in shop practice and shop organization, and Maurice I. in affairs of the foundry, although later he assumed responsibilities in the financial branch of the business and today is treasurer.

Born at Madison, April 21, 1870, Carl A. Johnson was graduated in 1891 from the University of Wisconsin, with a degree in mechanical engineering. Immediately following he entered the employ of the Gisholt company, later becoming vice president and general manager. Under his direction and with the co-operation of his brothers, the Madison company continued to grow until today it stands as a leader in its particular field, employing 1000 men. In point of equipment and layout, the Gisholt plant is generally conceded to be one of the most modern in the industry.

Mr. Johnson, it is said, is a man of few hobbies of recreational character. Possibly the nearest approach, and that for that matter has always been closely linked with business, has been the item of travel. He has been abroad many times. There is one thing, however, that his associates point to with significance: He was second baseman on the varsity base ball team at Wisconsin. They vouch that he still has a keen interest in the game.

In addition to his long affiliation with the National Machine Tool Builders' association, he is a member of

the American Society of Mechanical Engineers and for several years, including 1919 and 1920, he was president of the Wisconsin Manufacturers' association. He played a prominent part in the pioneering efforts of that organization and was appointed a director from its start in about 1913.

With his brother Hobart he was prominent in 1917 in organizing and operating the Northwestern Ordnance Co., at the request of the United States government. He is a director of Cutler-Hammer Inc., Milwaukee, the First National bank, Chicago, and other companies. He has numerous club affiliations and has always been closely identified with the work of commercial and civic organizations of his home city and state.

Men of the Industry

H B. SCOTT, manager of the tin plate sales division of the Wheeling Steel Corp., Wheeling, W. Va., and N. C. Reed, manager of the Detroit office, have been appointed assistant general managers of sales. Both will be located at Wheeling. J. L. Neudoerfer is general manager of sales, having succeeded John O. Tucker several months ago. W. B. Higgins is vice president in charge of sales located at the general offices at Wheeling.

W. M. Hall, now manager of the Boston office of the Wheeling corporation, will be transferred to Wheeling to succeed Mr. Scott as manager of the tin plate sales division. S. H. Waters, now of the Boston office, will succeed Mr. Hall as acting manager.

The Detroit office, made vacant by the promotion of Mr. Reed, will be in charge of H. B. Miller, now manager of the Cincinnati office. Mr. Miller formerly was located at the Detroit office before going to Cincinnati, and is well known in the Detroit district. At Cincinnati he will be succeeded by H. E. Smith, now manager of the St. Louis office, who in turn will be succeeded by B. M. Sharpe, who has been assistant manager at the St. Louis office.

O. I. Strickland, one of the assistant managers of the tubular sales division at Wheeling, has been appointed manager of that division.

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George Edwards, formerly with the Wheatley Bros. Brass Works, Tulsa, Okla., has become affiliated with the Standard Metal Works, Rockford, Ill.

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E. F. Adriance has resigned as assistant metallurgist for the Remington Typewriter Co., Ilion, N. Y., to become chief metallurgist for the W. A. Riddell Co., Bucyrus, O.

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Tom M. Girdler, who recently resigned as president of the Jones & Laughlin Steel Corp. to become associated with the Otis-Eaton-Mather interests, was elected a member of the advisory committee of Continental Shares Inc., at a meeting of directors Nov. 1. Other members of this committee are F. H. Blackburn, John S. Brookes Jr., H. W. Fenton, G. M. Hubbard, J. F. Schoellkopf and S. D. Warriner.

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Charles M. Guin, formerly cupola foreman at the United States Pipe & Foundry Co., Burlington, N. J., has become affiliated with the Rundle Mfg. Co., Milwaukee.

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Charles P. Hery has been appointed representative in Rochester, N. Y., territory for the Chicago Pump Co., 2336 Wolfram street, Chicago. His headquarters are in the Cutler building, Rochester.

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Henry O. Haughton, formerly production engineer at Chevrolet Motor Co.'s gray iron foundry, Saginaw, Mich., has resigned to become associated with the Charles E. Bedaux Co. of Illinois Inc., Chicago, industrial engineer.

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Arthur J. Speer, for 15 years industrial secretary of the national council of the Y. M. C. A. and latterly affiliated with the Silver Bay association, Silver Bay, Lake George, N. Y., has been appointed personnel director of the American Cast Iron Pipe Co., Birmingham, Ala. Mr. Speer is a graduate engineer.

* * *

B. F. Hamilton, superintendent for six years of the Columbus, Ind., plant of the Noblitt-Sparks Industries, Indianapolis, manufacturer of tubing for use in bicycles and wheel toys, has been appointed general superintendent of the Greenwood, Columbus and Seymour, Ind. plants. He is succeeded by Delmar Workman, formerly general manager of the Diamond Chain Co. plant, Indianapolis.

* * *

William C. Reitz, treasurer of the Pittsburgh Steel Co., Pittsburgh, has been elected vice president and treasurer of the company. Emil Winter continues as first vice president, but three additional vice presidents have been named. Henry J. Miller, secretary, now is vice president and secretary. Charles E. Beeson has been made vice president in charge of raw materials, and William C. Sutherland, formerly assistant to the president, has been named vice president in charge of manufacturing. The latter also has been elected a director. Prior to his appointment as assistant to the president, Mr. Sutherland was general superintendent at the Monessen, Pa., plant of the Pittsburgh company.

E. H. Kendall, general manager, Alliance Steel Products Co., Alliance, O., has sailed for England, having been selected as engineer to act in an advisory capacity with the board of the English Steel Corp. Ltd., one of the largest steel companies in Great Britain.

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John E. McCauley, who as briefly noted in IRON TRADE REVIEW last week, was re-elected president of the Steel Founders' Society of America at Chicago, Oct. 29, is vice president and general manager of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. He has been identified with the foundry industry for more than 25 years. He was born in Mifflintown, Pa., July 18, 1882. He completed his early education in the public schools of that center and attended Swarthmore college and Pennsylvania State university. In the interim between completing public school and entering college he served a special 2-year apprenticeship with the Standard Steel Works, Burnham, Pa., in the machine shop. After leaving college he became identified with the Solid Steel Casting Co., Chester, Pa., with the intention of learning the foundry business. Two years later he was employed in the erecting department, Baldwin Locomotive Works, Eddystone, Pa. He returned to the Solid Steel Casting Co. in 1909. In 1910 he was employed as manager of sales by the Birdsboro Steel Foundry & Machine Co., advancing to the position of assistant general manager in 1915 and in March, 1919, he was made vice president and general manager. He holds memberships

in the American Foundrymen's association, the American Iron and Steel institute, and the American Society for Testing Materials.

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E. G. Jones, formerly identified with the Canadian Brake Shoe Co. Ltd., was recently appointed plant superintendent of the Joliette Steel Co. Ltd., Joliette, Que.

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J. S. McClelland has been appointed manager of the recently-established branch warehouse at 7215 Livernois avenue, Detroit, of William Jessop & Sons Ltd., Sheffield, England.

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J. K. Merwin, formerly with the Cleveland office, Chain Belt Co., Milwaukee, has been placed in charge of the company's Boston office, recently established.

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J. J. Mitchell, formerly branch sales manager at Cleveland for the Square D Co., Detroit, has been transferred to Detoit and placed in charge of all panelboard sales.

M. W. Parmalee, sales representative at Cleveland, has been appointed manager there to succeed Mr. Mitchell.

R. C. Thompson, formerly of the Moock Electric Supply Co., Canton, O., succeeds Mr. Parmalee on the sales force at Cleveland.

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G. L. Hulben, with the sales organization of the Ludlum Steel Co. since January, 1926, has become identified with the Latrobe Electric Steel Co., 400 North Sangamon street, Chicago.

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George R. Roberts was recently placed in charge of the recently established Los Angeles office of the Alexander Milburn Co., Baltimore, manufacturer of welding and cutting apparatus.

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Albert J. Sams, 28 East Jackson boulevard, Chicago, has been appointed exclusive railway sales representative of the Little Giant Co., Mankato, Minn., manufacturer of power hammers.

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John M. Bush, land agent for the Cleveland-Cliffs Iron Co., Cleveland, with headquarters at Negaunee, Mich., has been named vice president and manager of the Munising Woodenware Co., in which Cleveland-Cliffs has a financial interest.

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K. B. Roberts, a graduate of the Georgia School of Technology and formerly employed by the Chattanooga Stamping & Enameling Co., Chattanooga, Tenn., has been added to the staff of the Ferro Enamel Supply Co., Cleveland.

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A. D. Brown was appointed manager of the Buffalo district office of the Allis-Chalmers Mfg. Co., Milwaukee, Nov. 1 to succeed M. W. Phelps, resigned. Mr. Brown has been special factory representative of the Pittsburgh transformer division of this company for the past year.

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Walter Mickelson, factory manager of the Kempsmith Mfg. Co., Milwaukee, milling machines, has been appointed manager of the Cleveland branch. He is succeeded by Hulet L. Livesey, formerly production manager. Gerald G. Telliger, formerly superintendent of the Evinrude Motor Co. factory, has been appointed production manager of the Kempsmith company to succeed Mr. Livesey.

* * *

C. E. Hague, district manager at Cleveland of the Rayton-Dowd Co., Quincy, Ill., manufacturer of electrifugal pumps, tractors, etc., was elected chairman of the newly-organized sales engineering division of the Cleveland Engineering society, Cleveland, Nov. 1. The branch has more than 200 members. Other officers are: J. L. Finnicum, vice chairman; F. W. Kessler, recorder; and G. L. Bloomquist, member of the executive committee.

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Hugh S. Chancey and not Hugh S. Clancey, as noted in IRON TRADE REVIEW of Oct. 24, was recently appointed manager of the Houston, Tex., office of the South Chester Tube Co., Chester, Pa. He previously had been associated with the Wheeling Steel Corp., Wheeling, W. Va., for several years at different points in the midcontinent oil fields, with headquarters at Dallas, Tex., and later at Houston. His present headquarters are at 2108 Mills street, Houston.

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L. F. DeLargey, formerly purchasing agent for the Saginaw, Mich., division of the Wilcox-Rich Corp., Detroit, has been appointed general purchasing agent and will supervise purchases of all divisions. Mr. DeLargey has been associated with the corporation for many years. Prior to the recent reorganization of the corporation, he was purchasing agent for the Wilcox Motor Parts & Mfg. Co. and later the Wilcox Products Corp. His headquarters will be at Saginaw.

Norton Co. Is Host

The Norton Co., Worcester, Mass., served as host to the Boston and Worcester chapters of the American Society for Steel Treating recently. After dinner the Norton plant was inspected. The meeting concluded with the showing of the company's moving picture "The Age of Speed". H. W. Dunbar, works manager of Norton Co. was in charge of the program.

To Ship Manganese from South Africa

New York, Nov. 5.—Further details concerning the Postmasburg manganese ore properties in South Africa are revealed by L. W. Cross, European manager of the Manganese Corp. Ltd., Johannesburg, South Africa, who returned to Europe a few days ago, following a brief business trip to this country. These properties have been the subject of considerable interest to the domestic steel trade, particularly following the announcement this summer of Wm. H. Muller & Co. Inc., 122 East Forty-second street, this city, as agents for the Postmasburg company in this country, and Wm. H. Miller & Co., Rotterdam, as agents for continental Europe. Further interest was evidenced upon the announcement about a month or so ago of the sale of the first cargo of the ore in this country.

"Following development work of the past six months, a stock of about 50,000 tons has already been accumulated," states Mr. Cross. "It is an ore of low phosphorus content, averaging as a rule below one tenth of 1 per cent, with about 52 per cent manganese. It also is of superior mechanical character.

"The ore will be crushed to between 2 inches minimum and 4½ inches maximum. Allowing for breakage during transport, which should be small, we expect to deliver the ore with about 95 per cent of lumps."

It is expected that shipments will begin during the second quarter of 1930, as the South African government has undertaken to finish the construction of a railroad of about 68 miles, which will connect Postmasburg with its main line.

"The Manganese Corp. Ltd. was formed early this year with a capital of £1,000,000 for the purpose of developing a number of freehold and leasehold properties in the Postmasburg district of the Cape Province of South Africa," says Mr. Cross.

"At the head of the company is F. N. Pickett, London, who has wide mining and engineering interests. One of the principal share holders of the Manganese Corp. Ltd. is the Huelva Copper & Sulphur Mines Ltd., London and Paris."

Obituaries

WILLIAM LISTON BROWN, 87, one of the founders of Pickands, Brown & Co., Chicago, died at his home in Pasadena, Calif., Nov. 1, where he had lived before and since he retired from active business about Jan. 1, 1925. He was born at St. Joseph, Mich., Aug. 23, 1842, and after a grade school education, he entered Garden City academy, Chicago. He left at the age of 15 to become a clerk in a Chicago commission house. He saw war service at Vicksburg and Jackson, Miss., and other western points between 1862 and 1865 and then became a bookkeeper for A. B. Meeker, Chicago, iron and steel dealer. Becoming a partner in 1870, he five years later took over Mr. Meeker's interest. In 1883 with Col. James Pickands, Maj. H. S. Pickands, Samuel Mather and Jay C. Morse, he organized Pickands, Brown & Co., becoming its president and remaining in that office 42 years. In 1890 he organized and became president of the Chicago Shipbuilding Co. and later was president and chairman of the board of the American Shipbuilding Co. He was chairman of the finance committee and a director of the Federal Steel Co., just prior to the formation of the United States Steel Corp.

Until it was merged with the By-Products Coke Corp., Mr. Brown was president of the Federal Furnace Co. The Iroquois Iron Co. and the Steel & Tube Co. of America also took up part of his time. After his retirement from active business he maintained a number of business connections in Chicago, such as his directorships in the First National bank, the First Trust & Savings bank, the By-Products Coke Corp. and several furnace and iron mining companies. He was a member of the American Iron and Steel institute, the Society of Naval Architects and Marine Engineers, as well as numerous clubs.

Funeral services were held in Chicago, Nov. 5.

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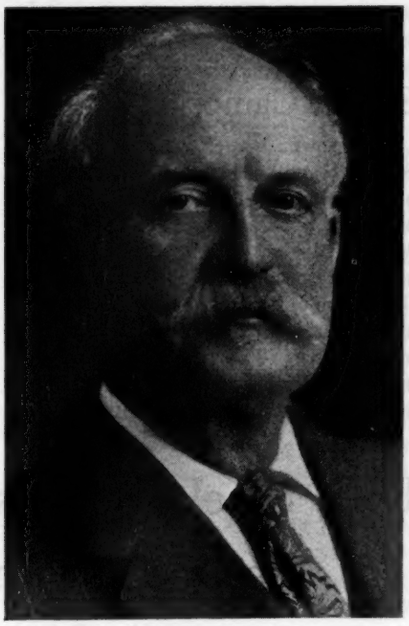
Joseph Lacroix, 74, president of the Hyde Mfg. Co., Southbridge, Mass., shoe cutters' blades, died recently in New York.

* * *

Alexander L. Schuhl, 45, manager of the Philadelphia office of the Independent Pneumatic Tool Co., Chicago, died unexpectedly of pneumonia, Oct. 20, after a brief illness. After finishing school, he became affiliated with the William Cramp & Sons Ship & Engine Building Co. as a machinist apprentice and was advanced until he was appointed foreman of the pneumatic tool room. He resigned in 1917



WILLIAM L. BROWN

to become identified with the sales organization of the Independent company and was appointed Philadelphia office manager in 1924.

* * *

Henry W. Milmine, formerly president and manager of H. B. Milmine & Co., Toledo, O., manufacturer of elevator cars, died there Oct. 11.

* * *

Richard H. Tyner, 61, president of the National Marking Machine Co., Cincinnati, which he aided in founding 18 years ago, died Oct. 24.

* * *

Ralph Wainwright Pope, 85, secretary of the American Society of Electrical Engineers from 1885 to 1911 and honorary secretary since 1911, died Nov. 1 at his home in Great Barrington, Mass., where he was born.

* * *

Edward P. Baird, 69, president of the Baird Lock Co., Chicago, died recently at his home in Evanston, Ill. Mr. Baird had been engaged in the lock manufacturing business for 50 years. In 1900 he established the Baird Mfg. Co., and in 1915 the Chicago Cabinet Lock Co.

* * *

Joseph A. Williams, 61, president of the K-W Ignition Co., Cleveland, since he organized it about 20 years ago, and inventor of the ignition system used on model T Ford automobiles, died Nov. 2 at his home in that city.

* * *

Emmet J. Strong, vice president and director of the J. M. & L. A. Osborn Co., Cleveland, sheet steel jobber, died at his home in that city Oct. 27. He was prominent in the steel business for many years and founded the Curtis Steel Roofing Co., Niles, O.

* * *

Henry A. Coles, 59, manager of the Atlanta, Ga., office of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died Oct. 27 at New Orleans. Mr. Coles attended the University of Virginia and joined the sales department of the Westinghouse company in 1897.

* * *

John William Lieb, 69, vice president and electrical engineer of international repute, died at his home in New Rochelle, N. Y., Nov. 1. Born in Newark, N. J., he was graduated in 1880 from Stevens Institute of Technology, where three years later he received an honorary degree of doctor of engineering. He was former president of the American Institute of Electrical Engineers, the Edison Pioneers, the Association of Edison Illuminating Companies, the National Electric Light association and the New York Electrical society and a former vice president of the American Society of Electrical Engineers. He was a fellow of the American Academy of Sciences and a member of the Engineers club of New York among numerous other organizations.

* * *

Francis A. J. Fitzgerald, 59, internationally known electrical engineer of Niagara Falls, Ont., died Oct. 26. He was born in Dublin, Ireland, and located in America in 1893. He was a graduate of the Massachusetts Institute of Technology. Early in his career he became connected with the

(*Concluded on Page* 1224)

Topping Sees Normal Demand Ahead

Net profit of the Republic Iron & Steel Co. for the third quarter of 1929 was $2,527,095 after all charges before dividends. This compares with $3,263,309 in preceding quarter and $1,280,775 in September quarter of 1928.

Net profit for nine months ended Sept. 30, 1929, was $8,667,530 after above charges, equal to $8.41 a share on 874,630 common shares, comparing with $2,821,962 or $2.53 a share on 596,030 common shares in first nine months of the preceding year.

Unfilled orders on hand Sept. 30, of finished and semifinished products totaled 271,331 tons, comparing with 356,845 tons on June 30, 1929, and 365,601 tons on Sept. 30, 1928.

J. A. Topping, chairman of the board stated that the general steel business is exceedingly good considering the fact that the industry has had several years of excessive demand. He said, "I feel that the present recession is a seasonal one although somewhat belated. I see no reason why we should not look forward in the future to normal demands."

Granite Billings Gain

The Granite City Steel Co. reports that earnings for the first nine months of this year were $1,302,023 after depreciation, federal taxes, etc., equivalent after $23,400 dividends paid on preferred stock, which was retired during the period, to $4.58 a share on 292,347 no-par shares of common stock. Giving no consideration to preferred stock, above net profit is equal to $4.66 a share on common. For quarter ended Sept. 30, net profit was $469,326 after above charges, equal to $1.61 a share on common stock. Total billings for nine months ended Sept. 30, 1929, amounted to $11,772,473, comparing with $10,935,883 in first nine months of 1928.

Follansbee Net Down

Net earnings of the Follansbee Bros. Co. for the third quarter of 1929 were $392,128 after all charges, against $597,088 in the preceding quarter and $402,572 in the March quarter of this year.

Superior Steel Net Up

Net profit of the Superior Steel Corp. for the quarter ended Sept. 30 amounted to $13,073, after depreciation, interest, taxes etc., compared with $75,025 in the preceding quarter and $14,904 in the corresponding period of 1928. For the first nine months of 1929 the company earned $194,450 compared with a loss of $17,453 in the like period of 1928.

Michigan Steel Nine Months Net Up

Earnings of the Michigan Steel Corp. for the third quarter of 1929 were $509,353, after all charges before dividends, compared with $593,202 in the preceding quarter. Net for the nine months was $1,689,818, equal to $7.68 a share on the 220,000 shares of outstanding common stock. This compares with $1,049,902 or $4.77 a share earned in all of last year.

Extend Cambria Program

Johnstown, Pa., Nov. 5.—Bethlehem Steel Co. will start a $10,000,000 improvement program at the Cambria plant upon the completion of a $12,000,000 project of a similar nature now under way, President Eugene G. Grace announced here last week during an inspection trip of the local properties. The proposed improvements in the lower works of the Cambria plant will include the installation of a new bessemer department and new open-hearth furnaces, in addition to numerous other items. There remains a year or more of work to complete the present program, after which the new project will be undertaken.

Donner Earnings Higher

The Donner Steel Co., Buffalo, reports net income of $472,656, after all charges, for the third quarter. This compares with $644,320 in the preceding quarter and $404,401 in the September quarter of 1928. For the first nine months of the year net income was $1,751,601, against $795,619 in the first nine months of 1928.

Japan Importing Scrap

According to figures of the Japanese department of commerce and industry, during 1928 the Pacific Coast shipped to Japan, in 11 items, steel products valued at $657,512. Iron and steel scrap composed the bulk of this movement. The total of iron and steel scrap was 34,093 tons, valued at $529,426, about equal quantities of approximately 10,000 tons being exported from each of the customs districts of Washington, Oregon and California.

U. S. Steel Purchases Columbia, Getting Foothold on West Coast

NEW YORK, Nov. 5.—The United States Steel Corp. has exercised its option to purchase the properties of the Columbia Steel Corp., on the Pacific coast, and will take possession next Feb. 1 on payment of approximately $46,630,000 in common stock.

The Columbia corporation, organized in 1922 as a merger of the Columbia Steel Co. and Utah Coal & Coke Co., acquired the Llewellyn Steel Co., Los Angeles, in 1923, and the Milner-Dear-Lerch iron holdings at Iron Mountain, Utah, and the Pacific Sheet Steel Co., South San Francisco, Calif., in 1926.

The corporation is said to have a large stock interest in the Pacific States Cast Iron Pipe Co., Ironton, Utah. Its main plants are at Pittsburgh and Torrence, Calif., Portland, Oreg., and Ironton, Utah. Its ingot capacity is 340,000 gross tons annually, and the proportion of United States Steel Corp. steel ingot capacity of the country is increased by the purchase from 39.02 per cent to 39.52 per cent.

The United States Steel Corp. states:

For several years the United States Steel Corp. has had under consideration the location of manufacturing operations on the Pacific coast, the better to serve its existing trade, as well as to prepare for the future growth of both domestic and foreign trade, by service from coast plants. It is economically logical that the Corporation should establish itself in the Far West. Its nearest present manufacturing operations of any substantial character, in the north, are in Illinois, in the Chicago district, and at Gary, in the Indiana district; and in the South, at Birmingham, Ala.

The purchase of Columbia's properties has been determined upon by the corporation after an extended and exhaustive examination, inspection and study of the properties and their possibilities. The growing demands for steel of various kinds in Pacific coast territory and the greater demands of customers for improved service make it desirable that the corporation have its own producing plants located there. This purchase of Columbia properties affords a nucleus from which it is confidently believed the productive capacity on the coast can be expanded from time to time, both to the interests of consumers and the territory.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

JOSEPH T. RYERSON & SON INC., Chicago, has purchased the business, equipment and stock of the Penn-Jersey Steel Co., Camden, N. J., to be effective on Nov. 16. This firm carries complete stocks of steel shapes, plates, sheets, hot and cold-finished bars, reinforcing bars and similar materials. It serves all industry and construction trades in the Philadelphia district with prompt shipment from warehouse. The Ryerson company plans to add to stock and increase facilities to improve and extend the service.

* * *

MERIDEN IRON CO., Russell M. Bennett and affiliated interests have removed their offices from the Security building to 1601 Foshay tower, Minneapolis.

* * *

SAFETY STAIR TREAD CO., Wooster, O., has changed its name to Wooster Products Inc. No change in policy or management will be made. The new company has $100,000 capital and 1500 shares no par value.

* * *

MONROE STEEL CASTING CO., Monroe, Mich., is rebuilding its foundry to 50 x 190 feet and installing a 5-ton crane, a 3-ton electric furnace, core ovens, sandblast barrel and other equipment. Production will be increased 50 per cent.

* * *

GRANITE CITY STEEL CO., Granite City, Ill., A. J. Kieckhefer president, is completing a machine shop 150 x 300 feet. The expansion will result in rearrangement of manufacturing facilities and considerably increase present production capacity.

* * *

UTAH FOUNDRY SUPPLY CO., 538 West Sixth street, south, Salt Lake City, has been established to deal in foundry equipment and supplies. The company also will handle alloying materials and sundries. P. F. Lambert is sales manager.

* * *

AMERICAN LOCOMOTIVE CO. has bought control of the McIntosh & Seymour Corp., Auburn, N. Y., manufacturer of diesel engines for marine, stationary and transportation uses. The company will continue to operate under unchanged management as a subsidiary of the locomotive company.

* * *

MISSOURI BOILER & SHEET IRON WORKS, St. Louis, will utilize adjoining property it recently purchased for enlargement of its production of transformer tanks. Castings for this work are made on contract. Walter Tolkacz is president and general manager.

* * *

ELLIS IRON WORKS, El Dorado, Ark., incorporated in July with $25,000 capital, is in production. Its machine and forge shop are producing oilfield supplies and equipment. Drilling equipment and core valves are the principal product. John H. Ellis is president and general manager.

* * *

FAITH MFG. CO., 2533 North Ashland avenue, Chicago, maker of die castings and automobile accessories, has purchased industrial property, 135 x 175 feet, at 5900 Crawford avenue, Chicago. Part of the property is being improved with a 2-story building, which will be ready for occupancy about Dec. 1.

* * *

GARDNER-DENVER CO., Quincy, Ill., has increased production to take care of unfilled orders which have been gaining during the past months. A recent large order is for a carload of pumps for the Texas oil fields. With the completion of an addition in a few weeks, more of the unfilled orders will be reduced.

Gardner-Denver Co. manufactures slush and mud pumps, rock drills, air compressors, high pressure drill steel forges and drill sharpeners. Its other two plants are located in Denver, Colo., and La Grange, Mo.

* * *

WROUGHT WASHER MFG. CO., Milwaukee, has bought the former gasoline engine plant of the Beaver Mfg. Co., the first step in an expansion program to be carried out during the coming year with an investment of upward of $500,000. Fred Doepka Sr. is president. The Beaver property consists of a building, 250 x 450 feet, and 16 acres of land. Next spring work will be started on three other structures of brick and steel, one story. They will be 65 x 500 feet and equipped with a modern re-rolling mill at a cost of $150,000, a raw material storehouse, 65 x 385 feet, and a shipping room, 100 x 250 feet.

* * *

WESTERN ELECTRIC CO., Chicago, has purchased the plant of the Turner Armour Corp., 6600 Metropolitan avenue, Queens, L. I., and has leased for a term of years that company's plant at 1201 Flushing avenue, Brooklyn, N. Y., it is announced by Edward S. Bloom, president of Western Electric Co. Turner Armour Corp. has produced chiefly telephone booths for Western Electric Co., and this line of manufacture is to be continued. The Flushing avenue plant contains about 60,000 square feet of floor space, and is used for assembling, finishing and shipping. The plant will be taken over Nov. 4, and will be known as the Queensborough works of the Western Electric Co.

Additional space for warehousing and assembling of parts for the completion of sound-reproducing machines has been acquired by Western Electric Co. as the result of leasing a building at Forty-third street and Damen avenue, Chicago. The property comprises 150,000 square feet of working space.

* * *

STEAM & COMBUSTION CO., 205 West Wacker drive, Chicago, has been incorporated for the production and sale of gas-fired boilers and kindred lines. The company is owned and operated by the G. W. Dulany Trust, Chicago. G. W. Dulany Jr. is chairman of the board, C. B. Page president, Wm. E. Eberhart vice president and treasurer, and Jas. E. Moore secretary and assistant treasurer. Directors include all of the officers and G. W. Dulany III, L. A. McDowell and W. R. Zitzewitz. Mr. Page has been a consulting engineer in Chicago for a number of years. The gas-fired boilers now being placed on the market are produced in association with the Freeman Mfg. Co., Racine, Wis., and the National Machine Works, Chicago. The former are boiler manufacturers and the latter are specialists in gas combus-

tion equipment. L. A. McDowell, a director of the new company, is president of the Freeman Manufacturing Co. and W. R. Zitzewitz, also director, is president of the National Machine Works.

* * *

COMMISKEY-CLARKE CO., St. Louis, jobber of pipe, fittings and industrial specialties, has moved from 3737 Olive street, to a new office and warehouse at 2928 South Broadway.

* * *

ST. LOUIS SCALE CORP., St. Louis, has moved its plant to a new location at California and Crittendon Streets. Frank R. Moser Jr. is vice president and general manager.

* * *

GEARS & FORGINGS INC., West Washington boulevard and Morgan street, Chicago, manufacturer of gears and forgings, which recently acquired newly-developed property at 2110-12 North Natchez avenue, Chicago, will occupy it as plant headquarters after Jan. 1. Improvements consist chiefly of two 1-story fireproof buildings, each approximately 100 x 150 feet, and each containing about 15,000 square feet of working space. The corporation's present plant is to be leased. The new property adjoins the right-of-way of the Chicago, Milwaukee, St. Paul & Pacific railroad, affording ample shipping facilities. The company formerly was known as the William Ganschow Co. William Ganschow is its vice president.

* * *

McKIERNAN-TERRY DRILL CO., 15 Park Row, New York, has changed its name to McKiernan-Terry Corp., as of Nov. 1, and has acquired ownership of the National Hoisting Engine Co., Harrison, N. J., and Steele & Condict Inc., Jersey City, N. J. The latter will preserve their identity as divisions of the company, but with executive activities transferred to the main offices of the corporation in New York. Arthur W. Buttenheim is president of the new corporation. Vice presidents in charge of various activities are as follows: Lester W. Buttenheim, production; Charles S. Ackley, sales; William F. Campbell, National Hoist division; John C. Smaltz, Steele & Condict division; Earle R. Evans, field operations. Thomas E. Sturtevant is treasurer, Samuel Harper assistant treasurer, Samuel S. Whitehurst secretary, and J. Forrester Campbell assistant secretary. Production previously carried on at the Steele & Condict plant at Jersey City will be transferred to and divided between the plants at Dover and Harrison, N. J. The latter plants have been increased and further additions are planned.

Obituaries

(*Concluded from Page* 1221)

Carborundum Co. and later was one of the founders of the Acheson Graphite Co., Niagara Falls, N. Y. His researches led to important discoveries in connection with both industries. In 1910 he removed to Niagara Falls, Ont., where as the Fitzgerald Laboratories he conducted an extensive practice as a consulting engineer. At the time of his death he was engaged in researches to beneficiate the low grade iron ores of Ontario and eliminate the importation of foreign ores. Numerous universities recognized the value of his discoveries by honoring him with degrees. He belonged to several scientific organizations, including the American Electrochemical society, of which he was past president, and the American Institute of Electrical Engineers.

* * *

Robert Emmet Jennings, 84, former vice president of the Crucible Steel Co. of America, New York, and former president and chairman of the board of the Carpenter Steel Co., Reading, Pa., died at his home in Montclair, N. J., Oct. 30, following a heart attack early in the month. Born Dec. 15, 1845 in Rochester, N. Y., Mr. Jennings started his business career in the hardware trade but soon after became affiliated with Atha & Illingsworth, Newark, N. J. Several years later he founded the steel company of Spaulding & Jennings, Jersey City. When this organization was sold in 1900 to the Crucible Steel Co. of America, Mr. Jennings became vice president of the latter, a position he held until his resignation in 1904. Early in the following year he was appointed reciever of the Carpenter Steel Co. of Reading, and became its president. During his life Mr. Jennings either as an officer or director was affiliated with the Eastern Steel Co., Pottsville, Pa., and Taylor-Wharton Iron & Steel Co., High Bridge, N. J. He also had numerous other business affiliations.

* * *

Theron I. Crane, 68, who retired from most of his business connections several years ago on account of ill health, died of heart failure Nov. 2 at Bellevue-Stratford hotel, Philadelphia. For many years he was well known in the pig iron industry as a partner of Pilling & Crane and vice president and treasurer of the Northern Iron Co. He also was connected with Warwick and other iron companies and also was interested in different mining companies. He was a member of the American Institute of Mining and Metallurgical Engineers, American Iron and Steel institute, Union League, Philadelphia and other clubs and was a director of the Eastern Steel Co.

* * *

Peter A. Newton, 56, general superintendent of South Works, Illinois Steel Co., Chicago, died unexpectedly of heart disease on Nov. 4, shortly after arriving at his office. Mr. Newton, a native of Chicago, was graduated as a mechanical engineer from Cornell university in 1894 and had spent most of his professional career at work with units of the Illinois Steel Co. Shortly after graduation he took up engineering work at the company's Joliet, Ill., works, and several years later was made assistant general superintendent. In 1906 he was transferred to South Chicago, as assistant general superintendent. In 1917 he became general superintendent there. Mr. Newton was active in social and welfare work at the plant, where he was president of the Good Fellows club. He also was a member of the American Iron and Steel institute, University and South Shore country clubs, Chicago, and the Chikaming Country club, Lakeside, Mich.

Convention Calendar

Nov. 13-15—International Acetylene association. Annual convention at Congress hotel, Chicago. A. Cressy Morrison, 30 East Forty-second street, New York, is secretary.

Nov. 13-16—American Institute of Steel Construction. Annual convention at Edgewater Gulf hotel, Biloxi, Miss. Charles F. Abbott, 200 Madison avenue, New York, is executive director.

Nov. 19—Foundry Equipment Manufacturers association. Fall meeting in New York. H. W. Standart, Northern Engineering Works, Detroit, is president.

Nov. 20-21—National Founders' association. Thirty-third annual convention at Hotel Astor, New York. J. M. Taylor, 29 South LaSalle street, Chicago, is secretary.

Dec. 4-5—Taylor society. Fall meeting in New York. H. S. Person, 29 West Thirty-ninth street, New York, is managing director.

Dec. 2-6—American Society of Mechanical Engineers. Annual meeting at Engineering Societies' building, New York. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

Dec. 2-7—National Exposition of Power and Mechanical Engineering. Eighth annual exposition in Grand Central Palace, New York. Charles F. Roth and Fred W. Payne, Grand Central Palace, New York, are managers.

Dec. 10-11—Malleable Iron Research Institute. Meeting at Hotel Cleveland, Cleveland. Robert E. Belt, 2013 Union Trust building, Cleveland, is secretary.

Jan. 8—Mining and Metallurgical Society of America. Meeting in New York. Percy E. Barbour, 2 Rector street, New York, is secretary.

Feb. 4—American Boiler Manufacturers association. Semiannual meeting in Cleveland. A. C. Baker, 801 Rockefeller building, is secretary.

Feb. 78—American Society for Steel Treating Semiannual meeting at Hotel Pennsylvania, New York. W. H. Eisenman, 7016 Euclid avenue Cleveland, is secretary.

Feb. 17-22—American Ceramic society. Thirty-second annual convention at Royal York hotel, Toronto, Ont. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

European Steel Trade Depressed

Entente Proposing 10 Per Cent Reduction in Output—Belgians Reduce Operations To Check Decline in Prices—British Markets Dull

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Nov. 5.—(*By Cable*)—British steel producers are concerned by the lack of new business, and increasing foreign competition. Conditions on the Continent are not much better, and the European steel entente is proposing a 10 per cent reduction in output. In Belgium the decision of some steelmakers to narrow down output has checked the declining tendency in prices. In Germany, domestic and export business has slumped, and in France only the domestic markets are reported as fair.

The reduction in the British bank rate has encouraged two steelworks in South Wales to resume operations. Barrow rail mills are busy. Business at Sheffield is depressed. The market for galvanized sheets is decidedly weak, especially for exports. The tin plate trade is hesitating, but works are well booked with export orders. Continental export markets in general are quiet, inquiry being limited and disappointing.

Continental Pig Iron Underselling British

LONDON, Oct. 25.—(*European Staff Service*)—Export business in British markets is quiet. Some inquiry has developed, but the result has been disappointing. Exports of foundry pig iron from the Middlesbrough district are limited, and some continental iron is being sold into the British market, mostly basic iron for steelmaking, which can be bought at £3 8s ($16.50) f.o.b. Antwerp. In the hematite pig iron market the British have to meet keen competition from French producers and sell below cost. Continental semifinished steel is being offered freely. While no large tonnage is being actually purchased, these offers have a depressing influence on British prices. Two-inch billets from the continent can be delivered in the Birmingham district at £5 11s 6d ($27), against the British price of £6 5s ($30.25) to £6 15s ($32.75). Bars can be had at £6 8s ($31), against the British price of £8 5s ($40), and beams at £5 ($24.25), against £8 2s 6d ($39.45). In the case of beams the rebate of 10s ($2.42) per ton for users of all-British steel continues to apply.

In the engineering section, conditions are more favorable, and among many various contracts, the following, calling for a substantial amount of iron and steel, have recently been obtained. P. & W. MacLellan Ltd., Glasgow, has been awarded the order for the steel structural work of a combined rail and road bridge over the source of the Nile. Several important orders for railroad rolling stock have been obtained by the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., Birmingham, including 60 freight cars for India, 100 all-steel freight cars for the Shanghai Nanking Railway, and 125 covered cars for the Sudan Government Railways. The North British Locomotive Co. Ltd., Glasgow, has been awarded the contract for 18 locomotives for the Benguela railroad of Lisbon, 6 locomotives for Rhodesia, 6 tank locomotives for Brazil, and 20 engines for Egypt. Four more sentinel locomotives for the Cauvery-Mettur hydroelectric scheme in India have been placed with the Sentinel Wagon

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, November 4	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$17.69	3 12 6*	$17.08	3 10 0	$17.08	3 10 0	$17.56	3 12 0
Basic-bessemer	16.71	3 8 6†	16.59	3 8 0	16.59	3 8 0	16.84	3 9 0
Hematite, Phosphorus 0.02-0.05	18.79	3 17 0	24.82	630*	.....	.....	17.81	3 13 0
SEMIFINISHED STEEL								
Billets	$31.11	6 7 6	$22.45	4 12 0	$22.45	4 12 0	$22.94	4 14 0
Wire rods	41.48	8 10 0	31.11	6 7 6	31.11	6 7 6	30.01	6 3 0
FINISHED STEEL								
Standard rails	$40.26	8 5 0	$31.72	6 10 0	$31.72	6 10 0	$32.26	6 12 0
Merchant bars	1.74c	8 0 0	1.13c	5 2 6	1.13c	5 2 6	1.13c	5 2 6
Structural shapes	1.60c	7 7 6	1.08c	4 18 0	1.08c	4 18 0	1.08c	4 18 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.37c	6 4 6	1.37c	6 4 6	1.37c	6 5 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.82c	13 0 0	2.93c	13 6 3	2.93c	13 6 3	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.20c	5 9 0	1.20c	5 9 0	1.22c	5 10 6
Plain wire, base	2.06c	9 10 0	1.60c	7 5 0	1.60c	7 5 0	1.62c	7 7 0
Galvanized wire, base	3.04c	14 0 0	2.01c	9 2 6	2.01c	9 2 6	2.00c	9 2 0
Wire nails, base	2.39c	11 0 0	1.71c	7 15 6	1.71c	7 15 6	1.71c	7 15 0
Tin plate, base box 108 pounds	$ 4.64	0 19 0	.....	.....	.....	.....	$ 9.02	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.69	3 12 6	$18.72	475(2)	$17.30	620	$20.34	85
Basic pig iron	16.71	3 8 6	20.09	510(1)	16.60	595	21.78	91
Furnace coke	4.39	0 18 0	6.30	160	5.86	210	5.15	21.50
Billets	31.11	6 7 6	24.43	620	24.83	890	28.95	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.53c	140
Merchant bars	1.79c	8 5 0	1.34c	745	1.27c	980	1.54c	141
Shapes	1.76c	8 2 6	1.26c	700	1.22c	935	1.50c	138
Plates ship, bridge and tank	1.93c	8 17 6‡	1.46c	820	1.46c	1,125	1.72c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.87c	1.595	2.47c	1,900	2.45c	225
Sheets, galvanized 24 gage, corrugated	2.90c	13 5 0	3.55c	1,970	3.58c	2,750	3.81c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.45c	225
Bands and Strips	2.17c	10 0 0	1.49c	825	1.46c	1,125	1.79c	164

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 18s 0d ($4.39) f. o. b. Ferromanganese £21 13s. 0d ($105.65) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Works Ltd., Shrewsburry, and Kitson & Co. Ltd., Leeds, have received the order for three locomotives for the Hong Kong Government railway from the crown agents for the colonies.

On the continent conditions vary according to the different countries. Prices generally have reached a low level, but the downward tendency appears to be checked, momentarily at least. Business at the Brussels and Charleroi iron and steel exchanges has become scarce, and German competition is making itself felt more severely. The pig iron market is uncertain, and demand for semifinished steel has substantially decreased. No more than £4 10s ($21.85) f.o.b. Antwerp can be obtained for 2-inch billets. The average quotation for bars is £5 2s ($24.75), and beams have been as low as £4 17s ($23). Demand for hoops and bands shows signs of increasing, and prices range from £5 7s 6d to £5 10s ($26 to $26.70). Plates have dropped to £6 3s 6d ($29.90).

German prices for certain products are higher than those quoted by the Belgians. Billets are quoted at £4 15s 6d ($23.10) and sheet bars at £4 17s ($23.50), although an order for nearly 2000 tons has been placed by a Welsh firm at £4 16s ($23.25). Galvanized wire has dropped to £8 18s ($43.10). On the whole, conditions are not satisfactory, although export demand for semifinished steel and beams tends to increase.

In France, producers are not satisfied with the prices ruling in export markets, and they are concentrating their attention on the domestic market, which offers a fairly good total of requirements.

France Makes More Iron

Paris, Oct. 24.—(*European Staff Service*)—Output of pig iron in France during August was much above that of July and included 703,000 tons of basic bessemer, 101,000 tons of phosphorus foundry, 13,000 tons of semi-phosphorus, 30,000 tons of hematite foundry, 22,000 tons of hematite steel-making pig iron, and 24,000 tons of ferroalloys.

Output of steel ingots and castings was composed of 808,000 tons of ingots and 19,000 tons of steel castings. It included 583,000 tons of basic bessemer, 225,000 tons of open-hearth, 7500 tons of acid bessemer, 1500 tons of crucible and 10,000 tons of electric steel. Comparisons are as follows:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1926	155	785,965	702,500
1927	142	774,785	689,610
1928	153	841,415	782,995
1929			
Jan.	157	904,000	842,000
Feb.	157	782,000	743,000
March	156	880,000	805,000
April	158	871,000	810,000
May	157	897,000	820,000
June	155	865,000	795,000
July	156	878,000	815,000
Aug.	156	893,000	827,000

Belgian Steel Market Weakens as Export Tonnage Buying Slackens

BRUSSELS, Oct. 25.—(*European Staff Service*)—The situation of the Belgian iron and steel market remains unsatisfactory, and prices are becoming weaker every day; the fall is brisk and at present it is difficult to say when it will stop. The recent decisions of the continental steel cartel at the meeting in Vienna have not corrected but have rather accentuated the pessimism. This unfavorable trend is causing absolute quiet in business, and absence of orders renders impossible any resistance to the pressure of buyers on prices.

The export market is inactive and practically no orders are received from abroad. The reasons for this situation seem numerous. Far East buyers have been influenced by the drop of the tael, and the latent war between Russia and China restricts orders. South America is not buying at present, as the coffee and cocoa crops have been unsatisfactory. Some concerns, such as Columeta and Sogeco, which some years ago established firms in Argentine and Brazil, have lost heavily and are beginning to abandon these markets, leaving them to exporters.

It is reported that some Belgian works in the Charleroi district have work assured for only a few days, and are obliged to cease operations from Thursday to Monday. At the present level of Belgian prices, and taking account of prices quoted in

France—2.78c

France, the Belgian works at present are in a good position to sell in France, especially in the north, and also in the Paris region.

There has been no change in the domestic market for foundry pig iron. A serious slackening has taken place in the remitting of orders for semi-finished material. Prices have been forced down. Six-inch blooms are quoted at £4 6s ($20.84). Two-inch billets are worth £4 12s ($22.28) and 3 to 4-inch billets £4 9s ($21.56). An order for 500 tons of sheet bars has been accepted by the Cockerill concern at £4 11s 6d ($22.16). The position of bars is worse than it was a fortnight ago. The mills are compelled to accept rebates under pressure of necessity of filling their order books. The normal price is £5 2s 6d ($24.85). The Germans are on the market.

Plates and sheets are not so seriously attacked, and the drop in prices is not so important as for other commodities. The Belgian wire syndicate has made a further reduction in prices, galvanized wire being £8 17s 6d ($43). The scrap market continues irregular, and a good tonnage has been bought at 46 Belgian francs ($1.28), which price is 5 francs (13.90c) lower than a week ago.

Belgian Output Steady

Brussels, Oct. 24.—(*European Staff Service*)—Output of pig iron in Belgium in September was slightly under that of August.

Output of steel ingots and castings in Belgium in September was composed of 337,120 tons of ingots and 9820 tons of steel castings. The following table gives figures for the first nine months of 1929 as compared with the monthly averages of the three preceding years and 1913, in metric tons:

Mon. ave.	Coke	Act. Fur.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	....	207,055	205,550	154,920
1926	413,000	....	283,270	281,160	231,810
1927	448,880	....	312,620	309,040	255,185
1928	493,885	....	325,445	327,870	281,125
1929					
Jan.	513,550	56	350,680	357,010	313,000
Feb.	458,740	55	302,320	302,020	266,790
Mar.	520,660	56	334,000	348,830	300,340
April	499,730	56	336,110	341,920	300,540
May	517,230	56	348,340	340,450	298,800
June	494,130	57	342,110	349,310	299,440
July	505,640	56	347,370	355,930	298,330
August	503,820	57	347,540	365,300	305,860
Sept.	488,250	57	346,750	346,940	288,150

German Output Is Less

Berlin, Oct. 24.—(*European Staff Service*)—Production of pig iron and steel in Germany in September was substantially less than in August and July. The September output included 672,120 tons of basic bessemer, 218,903 tons of ferroalloys, 108,343 tons of hematite, 106,752 tons of foundry, 2266 tons of direct castings, and 541 tons of gray forge pig iron.

Comparative figures are as follows:

Mon. ave.	Furnace on last day	Pig iron	Steel ingots and casting	Finished steel
†1913	.....	909,640	993,640	970,240
1926	*109	803,625	1,028,470	856,340
1927	*116	1,091,875	1,359,225	1,069,930
1928	*101	984,700	1,209,770	963,550
1929				
Jan.	97	1,097,980	1,469,653	1,001,824
Feb.	96	981,695	1,269,874	864,801
March	97	1,061,214	1,314,373	904,257
April	99	1,105,098	1,414,916	978,473
May	104	1,133,134	1,421,047	959,090
June	103	1,164,358	1,430,452	985,884
July	103	1,203,510	1,466,072	1,029,588
Aug.	96	1,167,809	1,401,707	1,012,666
Sept.	100	1,108,925	1,230,796	906,049

†Present boundaries.
*Last day of year.

French Ore Output Less

Paris, Oct. 24.—(*European Staff Service*)—Production of iron ore in France in August amounted to 4,338,772 metric tons, as compared with 4,436,240 tons in July. Stocks at the mines on Aug. 31 were 2,574,709 metric tons, as against 2,644,030 tons on July 31. Comparative figures follow:

Mon. ave.	Production	Stocks at end of month
1913	1,826,500	.....
1926	3,269,033	.....
1927	3,723,200	.....
1928	4,109,780	.....
1929		
January	4,535,282	2,683,084
February	4,001,486	2,803,556
March	4,410,287	2,884,230
April	4,176,277	2,802,839
May	4,119,746	2,671,183
June	4,185,227	2,580,158
July	4,436,240	2,644,030
August	4,338,772	2,574,709

Sheet, Tin Plate and Bar Mill Wages Steady

Wages of workers in independent sheet and tin plate mills will remain unchanged for November and December, it was determined at the bi-monthly meeting of representatives of the mills and the Amalgamated Association of Iron, Steel and Tin Workers, at Youngstown, O., Oct. 30. They continue 27 per cent above base. Average of sales prices of several grades on which wages are based was 3.05c per pound through September and October. Following is a comparison of the price averages for preceding periods:

Sept.-Oct.	3.05c	unchanged
July-Aug.	3.05c	unchanged
May-June	3.05c	+1.5 per cent
March-April	3.00c	unchanged
Jan.-Feb., 1929	3.00c	unchanged
Nov.-Dec.	3.00c	unchanged
Sept.-Oct.	3.00c	unchanged
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April	3.00c	unchanged
Jan.-Feb., 1928	3.00c	unchanged
Nov.-Dec.	3.00c	—3 per cent
Sept.-Oct.	3.10c	+3 per cent
July-Aug.	3.00c	unchanged
May-June	3.00c	unchanged
March-April, 1927	3.00c	—3 per cent

Bar mill wages for Amalgamated workers also remain unchanged for November and December, the average sales price of bar iron in September and October continuing at 2.00c per pound. Puddlers receive $11.80 a ton. Following are the average sales prices for periods designated:

	1929	1928	1927	1926
Jan.-Feb.	2.00c	1.85c	1.95c	2.00c
March-April	2.00c	1.85c	1.95c	2.00c
May-June	2.00c	1.90c	1.95c	2.00c
July-Aug.	2.00c	1.90c	1.95c	2.00c
Sept.-Oct.	2.00c	1.95c	1.90c	2.00c
Nov.-Dec.	2.00c	2.00c	1.85c	2.00c
Yearly average	2.00c	1.908c	1.925c	2.00c

Withdraws Stock Offer

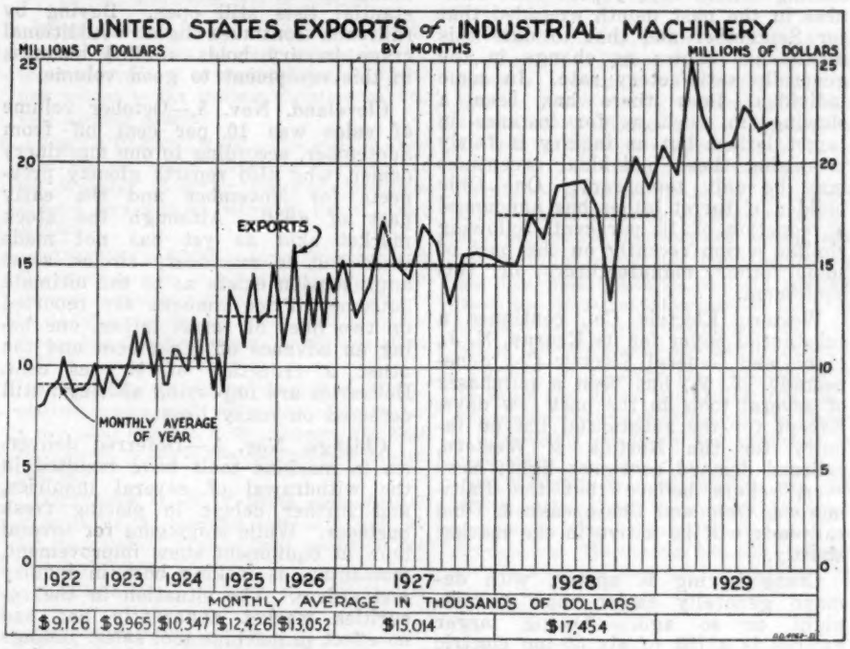
Sharon, Pa., Nov. 5.—Sharon Steel Hoop Co. recently notified its stockholders of an offering to be made of 90,000 shares of no par common stock, 75,000 shares of which stocks were asked to be subscribed for and the company requested waivers for 15,000 shares. The proceeds of the sale of the 75,000 shares were to be used for the further reduction of the funded debt maturing in 1948. Developments in the security market since the date of that notice have been such that the company feels it would be unfair to stockholders not to withdraw the offer at this time as many of the stockholders who would have liked to have subscribed may find it inconvenient or inadvisable for them to do so, the company states. Therefore, they are being advised that tne offer has been withdrawn and may be renewed hereafter when and if the directors feel such action is for the best interest of the company and the stockholders and when the general financial situation is more stabilized.

The company states it has ample funds for current requirements and in the present circumstances it seems obvious that the wise course to pursue is to permit the funded debt to stand.

Receiver Is Appointed

S. Crawford McKeen of the First McKeen National Bank and Trust Co., Terre Haute, Ind., has been appointed receiver for the American Steel Co. of that city. The appointment comes as a result of suits filed by the Terre Haute Foundation and others. The American Steel Co., organized a few years ago, took over the old Hoosier rolling mills, with Jacob Finkelstein as manager. The Terre Haute Foundation took $25,000 of the company's preferred stock. A mortgage on the property also amounts to about $20,000. Assets of the company are said to be about $150,000.

Nine Months Machinery Exports Nearly Equal to Total for 1928



AFTER a decline in August, American industrial machinery exports again took an upward turn in September, totaling over $21,500,000, or an increase of approximately $393,000 over the preceding month, according to figures of the industrial machinery division, department of commerce. As compared with September, 1928, when a sharp drop occured, exports during the same month of this year show a gain of $8,180,000 or 61 per cent. However, a better idea of the steady growth in foreign demand for American industrial machinery may be gained from the figures for the first nine months of the year. These show that foreign sales of this commodity during the first three quarters of the present year exceeded those made during the corresponding period of 1928 by 27 per cent and are now within striking distance of the entire 1928 volume.

Foreign sales of American metal working machinery during the first three-quarters of the year have totaled nearly $31,000,000, as compared with some $23,500,000 last year. September, moreover, has been a particularly heavy month, shipments abroad of this item amounting to nearly $3,400,000.

This represents an increase of 17 per cent over August and 65 per cent over September 1928. The general trend for most items of this group is upward, but particularly noteworthy gains have been made in lathes, gear cutting machinery, sheet and plate metal working machinery, forging machinery, foundry and molding equipment and pneumatic portable tools, while exports of rolling mill machinery have more than doubled. Sales of a few items have fallen off, however, including particularly, vertical drilling machines, radial drilling machines and external cylindrical grinding machines.

Machinery

Fair Activity Maintained in Sales and Inquiry—No Effect Felt from Recent Financial Quake—Price Changes Noted

MACHINE tool demand continues moderately active, deferred deliveries being the only unfavorable feature of the market situation. In some cases poor delivery on equipment has resulted in cancellation of inquiry. Although deliveries are somewhat easier in the West on shapers, milling machines, punch presses and combination machines, they remain deferred on drills, horizontal boring and drilling equipment, and other lines. Except for the sizable Norfolk & Western list, railroad buying is quiet. Recent disturbances in the stock market appear to have exerted no serious influence on machinery sales. Price fluctuations continue to be reported, one line of shapers being advanced 10 per cent, while changes have been made in turret lathe prices.

New York, Nov. 5.—Machine tool demand is moderately active. Most leading sellers here report that business in the past month exceeded that for September and that to date this month has shown no change in the generally satisfactory rate. In some individual lines there has been a slowing up, such as for instance in turret lathes, but as inquiry is fairly promising these individual exceptions may be only temporary. One Ohio builder of turret lathes has announced a reduction of 10 per cent, following similar action recently on the part of some other manufacturers of this equipment.

Western Electric Co., continues a substantial buyer for its Kearny, N. J., plant, and General Electric Co., Schenectady, N. Y., has been a purchaser of several tools in the past few days. Except for the substantial list on inquiry for the Norfolk & Western, railroad demand continues light; however, sellers believe that the Baltimore & Ohio and Chesapeake & Ohio railroads will be active in the market shortly.

Crane buying is spotty, with demand generally easier than a fortnight or so ago. Among larger awards is a list of six 30-ton electric overhead cranes for the local board of transportation, for substation work, This business, pending many months, went to Cleveland Crane & Engineering Co. Industrial Brown Hoist Corp. has closed on two 50-ton locomotive cranes for the Baltimore & Ohio and one gasoline crane for John A. Roebling's Sons Co., Trenton, N. J.

Worcester, Mass., Nov. 5.—While business is described as good in all lines of the machinery market here buying is becoming more careful and the general tendency toward that end undoubtedly will become more noticeable in view of recent events in financial quarters, according to men close to the market. Grinders, lathes and drills, millers, sprocket wheels and chains are holding to schedules but other lines report a diminishing inquiry. The general prospect, however, is for good business in 1930.

Pittsburgh, Nov. 5.—Machine tools are less active, although business remains seasonally heavy. Large lists are lacking both in awards and inquiry but a fair demand continues for individual tools. Delivery is being improved gradually by builders. Deferred shipment of several months still is in effect on a number of items, however. Pending business remains in fair volume with a few substantial lists still open. Buying by railroads continues light. Additional crane inquiry holds unfilled business in this equipment to good volume.

Cleveland, Nov. 5.—October volume of sales was 10 per cent off from September, according to one machinery dealer, who also reports gloomy prospects for November and the early part of 1930. Although the stock market skid as yet has not made itself felt in machinery circles, some apprehension exists as to the ultimate outcome. Price changes are reported on two lines of turret lathes, one being an advance of 5 per cent and the other a reduction of 10 per cent. Deliveries are improving although still deferred on many lines.

Chicago, Nov. 5.—Deferred deliveries in machine tools have resulted in the withdrawal of several inquiries, and further delays in placing fresh business. While shipments for several lines of equipment show improvement, momentum is lacking both in inquiry and orders. The situation in the securities market apparently has had no effect in machine tool sales. Billings against orders were checked last month by slow deliveries from builders, and October shipments were below expectations. Sales last month were close to September, but fell far below October, 1928, on the whole. Western machine tool builders report easier deliveries in shapers, milling machines, punch presses and combination machines, but drills and horizontal boring and drilling equipment remain extended. Shipments on smaller punch equipment now are being made in four to five weeks, while larger punches are behind six to eight weeks. Several orders for lathes and shapers were placed among general manufacturers in the Chicago district during the week, and several of the tool and die shops have asked bids on additional equipment. Western Electric Co. has leased further outside space for manufacturing, and will be in the market again later. Additional inquiry also is expected from International Harvester Co. A western Ohio manufacturer purchased two horizontal boring and drilling machines in this territory. One line of shapers shortly will be advanced 10 per cent in price, according to an announcement here, in addition to the advance of 5 per cent by a lathe manufacturer, effective Nov. 1.

Dr. Stoughton To Receive Grasselli Medal

New York, Nov. 5.—Presentation of the Grasselli medal of the Societe de Chimie Industrielle will be made to Dr. Bradley Stoughton, head of the department of metallurgy, Lehigh university, Bethlehem, Pa., on Nov. 8 at a dinner tendered to him in Rumford hall by the American section of that organization. B. D. Saklatwalla, vice president and chief metallurgist, Vanadium Corp. of America, Bridgeville, Pa., will make the presentation. In accepting, Dr. Stoughton will speak on materials for aircraft construction.

The occasion will be a joint meeting of the Societe de Chimie Industrielle, American Chemical society and the American Electrochemical society.

Increase Rolling Stock

The railroads Oct. 1 had 29,481 freight cars on order, according to the car service division of the American Railway association. This was an increase of 21,959 cars above the number on order Oct. 1, 1928, and an increase of 14,648 cars above the same day two years ago. It also was 12,635 cars above Oct. 1, 1926.

Of the freight cars on order Oct. 1, reports showed 16.014 were box cars, an increase of 12,977 compared with the same date last year. Coal cars for which orders have been placed number 11,968, an increase of 9557 compared with the number of such cars on order Oct. 1 last year. Refrigerator cars on order totaled 165, flat cars 1284, and other miscellaneous freight cars 50.

Locomotives on order Oct. 1 this year numbered 354, compared with 113 on the same day in 1928, and 134 Oct. 1, 1927. Oct. 1, 1926, the railroads had 443 on order.

New freight cars placed in service in the first nine months of 1929 totaled 59,929, of which box cars totaled 28,285; coal cars 21,925; flat cars 3259; refrigerator cars 3413 and stock cars 2472. Other classes installed in service during that period totaled 575. New locomotives placed in service in the first nine months of 1929 totaled 540.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

East Central

BRADLEY, ILL.—Manco Mfg. Co., manufacturer of wood-working machinery and hardware, advises it will build a plant addition which will contain about 10,000 square feet of floor space and cost about $25,000. Additional machinery, heating and ventilating equipment will be installed.

CHICAGO—W. J. Korber, 267 North California avenue, has been issued a permit for the construction of a 2-story machine shop, 52 x 127 feet. Estimated cost about $34,000.

CHICAGO—Elkay Mfg. Co., 4710 Arthington avenue, manufacturer of sheet metal goods, has been issued a building permit for a 1-story addition, 50 x 125 feet.

CHICAGO—Merit Hardware Mfg. Co., 2125 West Rice street, contemplates the construction of a 3-story casket plant estimated to cost about $350,000. Architect has not been selected.

CHICAGO—By-Products Coke Corp., 112th street and Torrence avenue, has been issued a building permit for a 3-story laboratory, 33 x 65 feet. Estimated cost about $40,000.

FORT WAYNE, IND.—F. & A. Air Jack Mfg. Co., Inc., Dayton, O., has leased a building, 120 x 150 feet, at Wayne Trace and Oxford streets for manufacturing purposes. The company will move here immediately.

KOKOMO, IND.—Riess Mfg. Co., manufacturer of brake service equipment, has purchased land and buildings formerly occupied by the Ford & Donnelley Co. A foundry will be immediately remodeled as a temporary assembly plant.

MICHIGAN CITY, IND.—Sullivan Machinery Co., manufacturer of drilling machinery, will soon start an expansion program which will add about 50,000 square feet of floor space, according to S. T. Nelson, manager.

MICHIGAN CITY, IND.—Josam Mfg. Co., manufacturer of drains, has acquired the former plant of the Dunham Co. Ahlgrim & Boonstra, local architects, are drawing plans for an extension to the foundry.

SOUTH BEND, IND.—Hurwich Iron Co. advises it is rebuilding its plant recently damaged by fire. The building will be 100 x 200 feet, equipped with machinery for the manufacture of red and yellow brass, manganese bronze and aluminum ingot. A warehouse for raw metal storage is also included. (Noted Oct. 31.)

DETROIT—U. S. Aluminum Co., 3311 Dunn road, is taking bids for a 1-story plant addition, 100 x 380 feet, estimated to cost about $75,000.

DETROIT—Motor Car Carriers Inc., recently incorporated, will soon start production here of a new type of truck trailer for transportation of automobiles from plant to dealer. Offices are at 1174 First National Bank building.

DETROIT—Hoskins Mfg. Co., 4435 Lawton avenue, manufacturer of electric furnaces, awarded a contract for a 1-story plant addition to Hazelton Clark Co., Michigan Theater building, Detroit. Equipment will be installed.

DETROIT—Advance Stamping Co., 5712 Twelfth street, has awarded a contract for the construction of a plant building on Livernois avenue to the Hoffman Construction Co., 6455 Kingsley avenue.

GRAND RAPIDS, MICH.—Fire recently damaged the car repair shops and storehouse at the Wyoming yards for the Pere Marquette railroad here with an estimated loss of about $100,000.

MENOMINEE, MICH.—Charles G. Janson, 220 Stephenson avenue, is about to start work on the construction of a fireproof garage and service building, 1-story, 120 x 135 feet, at Ogden avenue and Carpenter street. It will cost about $75,000.

ALLIANCE, O.—Alliance Drop Forging Co., recently incorporated, will award contracts for a new plant at once. F. W. Andrews, 504 East Main street, is one of the incorporators. (Noted Oct. 24.)

COLUMBUS, O.—W. V. Drake, clerk of board of education, is receiving bids until Nov. 15 for the purchase of metal shop equipment for East high school.

CLEVELAND—E. P. Pierce Co., 4903 Harlem avenue, manufacturer of punch press dies, has awarded a contract for a new plant to be built on East Forty-ninth street to Ray P. Adams, 975 Roanoke road, Cleveland Heights, O. (Noted Sept. 12.)

SPRINGFIELD, O.—National Foundry & Furnace Repair Co., Dayton, O., which recently purchased a building here from the American Radiator Co., is making preparations to open it as a branch. Equipment is to be purchased and will be installed as soon as possible, according to C. E. Davis, general manager.

TOLEDO, O.—Toledo Scale Co., Monroe and Albion streets, is having plans prepared for a plant addition on Telegraph and Laskey roads.

TOLEDO, O.—Ohio Bell Telephone Co., 42 East Gay street, Columbus, O., will take bids about Nov. 10 for a 1-story garage, 128 x 246 feet, also for a 1-story warehouse, 110 x 110 feet, at Oakwood avenue and Hawthorne street.

BELOIT, WIS.—Work has been started by the Beloit Iron Works, 815 Second street, on a shop addition costing about $35,000. The concern is a maker of machinery and equipment for paper mills.

MILWAUKEE—Wrought Washer Mfg. Co., 46-54 South Bay street, has purchased the former plant of the Beaver Motor Co., Oklahoma and First avenues. The company will make improvements and use the plant for itself or one of its subsidiaries.

West Central

BOISE, IDAHO—Union Pacific Stages, care B. T. Peyton, manager, Portland, Oreg., will soon take bids for repair shop, 100 x 125 feet here. Estimated cost about $48,000.

FORT DODGE, IOWA—City awarded contract for a machine shop and administration building in connection with waterworks system.

SHELDON, IOWA—Spencer Roords, Rock Valley, Iowa, has started construction of a 1-story machine shop, 60 x 80 feet, on Second avenue.

WATERLOO, IOWA—Royer Mfg. Co., Janesville, Wis., will start production of road equipments about Jan. 1 in the Caward-Dart building here, according to J. R. Royer, president.

KANSAS CITY, KANS.—Chicago, Rock Island & Pacific railroad, care W. H. Peterson, engineer, LaSallee street station, Chicago, awarded contract for two 1-story service buildings here to Joseph E. Nelson & Sons, 3240 South Michigan avenue, Chicago.

MANKATO, MINN.—Chicago, St. Paul, Minneapolis & Omaha railroad, 226 West Jackson boulevard, Chicago, awarded a contract for the construction of an enginehouse with repair facilities to the J. B. Nelson Construction Co., Mankato. Estimated cost about $55,000.

KANSAS CITY, MO.—Clay & Bailey Mfg. Co., 7007 East Fifteenth street, has acquired a site on Fortieth street including a building to be used as a foundry. Three buildings will be erected including a machine shop, warehouse and cleaning room.

SEDALIA, MO.—Missouri Pacific railroad, Thirteenth and Olive streets, St. Louis, has awarded contract for the construction of a 1-story spring shop to T. H. Johnson, Sedalia.

ST. LOUIS—Herman Body Co., Clayton and Newstead streets, has been issued a permit for

the construction of a small 1-story body plant. Murch Bros. Construction Co., Railway Exchange building, is architect and contractor.

ST. LOUIS—Tiffany Aluminum Products Co., 3219 Locust street, has purchased a plant building at Branch and Buchanan streets which contains about 27,000 square feet of floor space. Approximately $20,000 will be spent for new equipment.

Western States

EL CENTRO, CALIF.—Imperial Irrigation district plans an election soon for the purpose of voting on a $2,000,000 bond issue for a diesel electric generating plant. (Noted April 25.)

FRESNO, CALIF.—H. E. Haynes & Son, 1445 Broadway, awarded a contract for two additions to their auto repair shop to H. A. Weimer, Fresno.

LOS ANGELES—National Lead Co., 111 Broadway, New York, has plans for the construction of the first unit of a lead plant here estimated to cost about $250,000.

LOS ANGELES—U. S. Electrical Mfg. Co., 200 East Slauson avenue, has plans for a 1-story plant addition, 140 x 150 feet. Hamm & Grant, Ferguson building, are engineers.

LOS ANGELES—Western Light & Fixture Co., 301 South Los Angeles street, awarded a contract for a 1-story plant addition at Third and Gary streets, estimated to cost about $40,000.

MAYWOOD, CALIF.—American Brake Shoe & Foundry Co., 1179 East Thirty-second street, Los Angeles, has sketches for a proposed foundry here.

OAKLAND, CALIF.—C. McCall, architect, 1404 Franklin street, has sketches for a proposed 1-story auto accessory plant estimated to cost about $150,000.

SAN FRANCISCO—Reliance Truck & Trailer Co., 1217 Stanyan street, awarded a contract for a 1-story addition at Sixteenth and Folsom streets to cost about $40,000.

PUEBLO, COLO.—Fleetcraft Airplane Corp., Pueblo, and Lincoln, Nebr., plans building an airplane plant on a tract adjacent to the municipal airport here. Estimated cost about $500,000.

LAUREL, MONT.—Laurel Oil & Refining Co. has purchased a tract of 103 acres on which it is proposed to erect a $1,000,000 refinery, according to F. H. Johnston, sales manager. Capacity will be 1000 barrels daily.

PORTLAND, OREG.—Laher Auto Spring Co. awarded a contract for a 1-story addition, 100 x 100 feet, at Fifteenth and Davis streets. Estimated cost about $50,000.

TACOMA, WASH.—St. Paul & Tacoma Lumber Co., Tacoma, will build an electrically operated lumber manufacturing plant at Kulshan, to cost about $200,000.

Canada

VANCOUVER, B. C.—Western Bridge Co. Ltd., is planning a large addition to its plant here which will cost several hundred thousand dollars. The company is affiliated with the Hamilton Bridge Co., Hamilton, Ont.

CORNWALL, ONT.—Fibre Conduit Co. Ltd. has awarded a contract to Anglin-Norcross Ltd., Montreal, Que., for the erection of a plant here to consist of five 1-story buildings.

HAMILTON, ONT.—International Harvester Co., Burlington street east, has awarded contract to Humphrey Bros., 214 Burlington street east, for the erection of a 1-story plant addition.

LEASIDE, ONT.—Durant Motors of Canada has construction under way of plant additions for increased capacity at its plant here. Tenders have been called for materials and excavating is nearly completed.

HAMILTON, ONT.—B. H. and Fred Prack, Pigott building, have completed plans for the erection of a 4-story addition for the B. Greening Wire Co., Napier street.

SOUTH PORCUPINE, ONT.—The mill and other equipment at the Dome Mines Ltd., here recently damaged by fire with a loss estimated at $750,000, will be replaced without delay at a cost of approximately $1,000,000. Alex Fasken is secretary.

TORONTO, ONT.—Parker Pen Co., Janesville, Wis., has acquired a tract here for a proposed new plant on which work is expected to begin early next year.

TORONTO, ONT.—Dominion Boxboard Co., 130 Duchess street, has awarded contract to the Toms Contracting Co., Fleet street, for the erection of a 1-story generator building to cost $15,000.

REGINA, SASK.—Western Mfg. Co. contemplates building a $300,000 plant addition on Dewdney avenue. Building to be 1-story, 64 x 173 feet.

North Atlantic

EAST HARTFORD, CONN.—Chance Vought Corp., Long Island City, N. Y., awarded a contract for a 1-story airplane manufacturing plant, 350 x 675 feet, to the R. G. Bent Co., Hartford, Conn. (Noted Aug. 8.)

NEW HAVEN, CONN.—City, care municipal airport commission, has plans for an airport including hangars and shops on Thomason avenue. Westcott & Mapes, 139 Orange street, are architects.

STONY CREEK, CONN.—Nutmeg Crucible Steel Co., manufacturer of carbon and alloy steel castings, has awarded a contract to Leo. F. Caproni & Co., New Haven, Conn., for the construction of a plant addition, 70 x 103 feet.

BALTIMORE—Baltimore Copper Smelting & Rolling Co., Highland and Eastbourne avenues, awarded a contract for a 1-story plant addition to H. West, Knickerbocker building. Estimated cost about $25,000.

BALTIMORE—Maryland Bolt & Nut Co., Mt. Washington, Md., has been issued a permit for the construction of a 2-story plant building, 30 x 60 feet. The Consolidated Engineering Co., 20 East Franklin street, is architect-contractor.

BOSTON—Buzzards Bay Gas Co., 1 State street, has plans for an illuminating gas plant in the Buzzard Bay section to cost about $500,000. S. B. Gallagher, 20 Hammat street, Ipswich, Mass., is engineer.

SOUTH WALPOLE, MASS.—Bird Machine Co., Washington street, has awarded a contract for a 1-story boiler shop addition.

BELLEVILLE, N. J.—Westinghouse Electric & Mfg. Co., 150 Broadway, New York, will soon award contract for the construction of a 2-story manufacturing plant here estimated to cost about $150,000. J. H. and W. C. Ely, 605 Broad street, Newark, N. J., are architects. (Noted Aug. 8.)

CAMDEN, N. J.—Stanley S. Cramer, Copewood and Thorne streets, awarded a contract for a 1-story foundry, 40 x 80 feet, to C. L. Turner, 96 Kendall boulevard, Oaklyn, N. J.

NEWARK, N. J.—Sonatron Tube Co., 57 State street, will receive bids about Nov. 15 for the construction of a 6-story plant, 68 x 120 feet, for manufacturing radio tubes. Siegler & Greenberg, 164 Market street, are architects. Estimated cost about $175,000. (Noted Aug. 30.)

SAYREVILLE, N. J.—Management & Engineering Corp., architect and engineer, 327 South LaSalle street, Chicago, is taking bids for a 4-story power plant here for the Eastern New Jersey Power Co. Estimated cost about $1,000,000.

BROOKLYN, N. Y.—B. Kugler, 1953 Ocean parkway, has plans for the construction of a 4-story service garage at Quentin road and Coney

Island avenue estimated to cost about $150,000 I. Kallich, 26 Court street, is architect.

BROOKLYN, N. Y.—Atlantic Basin Iron Works, 168 VanBrunt street, has plans for the construction of a 2-story shop building to be erected at Imlay and Summitt streets. G. L. Slaight, 343 Columbia street, is architect.

BUFFALO—J. J. Geigand, architect, 345 Herman avenue, is taking bids for a 1-story automobile sales and service building for the Marsh Motor Corp., 655 Fillmore avenue.

ENDICOTT, N. Y.—C. H. Higgins, architect, 101 Park avenue, is finishing plans for a 4-story plant here for the International Business Machine Corp., 50 Broad street, New York.

BUTLER, PA.—Austin Motor Car Co., care A. J. Brandt, president, Stormfeltz-Lovely building, Detroit, is having plans prepared for plant alterations here estimated to cost about $100,000.

OAKMONT, PA.—Edgewater Steel Co. is taking bids for the construction of a 2-story testing and storage building. No date set for closing.

PITTSBURGH—Zenith Aircraft Corp., 504 Standard Life building, has purchased 200 acres adjoining Bettis field and plans to develop the site as an airport and manufacturing plant. The company already has established a small plant.

YORK, PA.—Lime & Hydrate Plants Inc., William J. Kuntz, president, 544 East Boundary street, recently incorporated to manufacture lime plant machinery, advises it proposes to build a plant in the future. (Noted Oct. 17.)

Southern States

HUNTSVILLE, ALA.—Electric Bell Range Co. has awarded a contract to G. A. Rogers for the construction of a 2-story enameling plant, 52 x 144 feet.

TARRANT, ALA.—Universal Metal Mfg. Co. has awarded a contract to Price & Belcher, 2904 North Twenty-seventh street, Birmingham, Ala., for the construction of a 1-story plant addition, 75 x 125 feet. (Noted Oct. 10.)

JACKSONVILLE, FLA.—Crane Co., 836 South Michigan avenue, Chicago, plans building a 3-story warehouse, 105 x 105 feet, at Bay and Lee streets.

LEXINGTON, KY.—Universal Steam Motors Inc., Guaranty Bank building, advises it is in production in Chicago, and will build a plant in Lexington or Louisville, Ky., this year. Machinery, tools, drop forgings and castings will be needed. (Noted Oct.

BATON ROUGE, LA.—Standard Oil Co. of Louisiana, and Louisiana Steam Products Inc., subsidiaries of Stone & Webster, 49 Federal street, Boston, plan construction of a steam and electric power plant here to cost about $6,000,000.

SHREVEPORT, LA.—City plans an election Dec. 17 for voting on a $500,000 bond issue for waterworks improvements including a pumping station at Cross lake.

MERIDIAN, MISS.—State building commission, Jackson, Miss., has awarded a contract for the construction of a group of hospital buildings including a power house and service building to Garber & Lewis, Jackson. (Noted Oct. 3.)

OKLAHOMA CITY, OKLA.—J. A. Werme Iron & Steel Co., 510 North Indiana street, is building a warehouse, 100 x 300 feet.

ATHENS, TENN.—Athens Stove Works, C. L. Williams general manager, has plans for enlarging its machine shop department. (Noted Oct. 10.)

FRANKLIN, TENN.—Allen Mfg. Co., 300 Tenth street, Nashville, Tenn., has awarded several contracts in connection with the establishing here of a stove manufacturing plant. (Noted Oct. 17.)

BROWNSVILLE, TEX.—Pan-American Airways Inc., 122 East Forty-second street, New York, will soon take bids for ten steel hangars for use between here and Mexico City, Mexico. (Noted July 4.)

HOUSTON, TEX.—Gulf Pipe Line Co., Gulf building, has acquired 308 acres south of Lucas, Tex., for additional storage facilities and plans to erect ten 80,000-barrel tanks.

HOUSTON, TEX.—Houston Concrete Pipe Co., recently organized with S. H. Walker, 1813 Colquitt avenue, president, has acquired a site at Pannell street and the Texas & New Orleans railroad for a new plant to cost about $40,000.

Recent Incorporations

CHICAGO—Radio Manufacturers Corp., 209 South LaSalle street, has been incorporated with 10,000 shares of no par stock to manufacture and sell radios, parts and equipment, by Seward Bowers.

CHICAGO—Superior Tool & Stamping Co., 4519 Haddon avenue, has been incorporated with $100,000 capital to manufacture and sell tools, machinery, engines and metals, by Benjamin E. Irmis.

GLEN ELLYN, ILL.—Tractor-Bit & Tool Co., 457 Park boulevard, has been incorporated with $100,000 of preferred and 20,000 shares of no par common stock to manufacture and sell drills, bits, tools and equipment, etc., by Oscar E. Miller.

OAK PARK, ILL.—Engineering Laboratories Co., 911 South Elmhurst street, has been incorporated with 200 shares of no par stock to manufacture and sell automotive accessories and attachments, by William Shapiro.

INDIANAPOLIS—J. W. Head Mfg. Co. has been incorporated with 650 shares of stock to manufacture material handling equipment. W. J. Goodwin, 122 East Forty-seventh street, is one of the directors.

BOSTON—Boardman Aircraft Corp. has been incorporated with 100 shares of no par stock to manufacture aircraft, seaplanes, equipment, tools and spare parts. Russell M. Boardman, 27 James street, Brookline, Mass., is president.

BOSTON—Westminster Motors Inc., 3012 Washington street, has been incorporated with $37,000 capital to manufacture automobile parts and accessories. Clarence Rich is president.

NEWBURYPORT, MASS.—Hardinger & Hoyt Inc. has been incorporated with $15,000 capital to manufacture automobile bodies, trucks, aeroplanes and motors of all kinds. Frank Hoyt, Newburyport, is president.

WORCESTER, MASS.—United States Vending Corp. has been incorporated with 1000 shares of no par stock to manufacture automatic vending machines, etc. Daniel F. Reilley, 93 Lincoln street, is president.

DETROIT—Anchor Tool & Die Co., 1831 VanDyke avenue, has been incorporated with $10,000 capital to operate a general machine shop business, by Fred Twombley.

DETROIT—Drying & Conveying Equipment Co., 17333 Healy street, has been incorporated with 7500 shares of no par stock to manufacture and install plant equipment, by J. C. Smith.

DETROIT—J. Lee Hackett Co., 2-123 General Motors building, has been incorporated with $100,000 capital to manufacture and deal in tools, machinery and supplies, by J. Lee Hackett.

DETROIT—Ivers Chrome & Metal Plating Co., 1422 East Larned street, has been incorporated with $20,000 capital to deal in metal products and by-products, by Wallace J. Ivers.

DETROIT—Knott & Garllus Co. Inc., 1345 A street, has been incorporated with $100,000 capital to manufacture and deal in health equipment and engage in general manufacturing, by Frederick E. Ritzenheim.

DETROIT—Autofont Co., 7881 Conant avenue, has been incorporated with 5000 shares of no par stock to manufacture and sell coin operated vending machines, by F. C. Crawford.

FLINT, MICH.—Smoke Consuming Co. has been incorporated with $30,000 capital to carry on the necessary operations for the manufacture and sale of a patented article, by Joseph R. Joseph, 501 Genesee Bank building.

YPSILANTI, MICH.—George L. Ennen Co., 110 River street, has been incorporated with $30,000 to manufacture automobile sundries, buy and sell metals and scrap, by Oramel L. Ennen.

ELIZABETH, N. J.—Flocken Construction Co. has been incorporated with $100,000 capital to engage in the contracting business, by Louis Auerbacher Jr., 60 Park place, Newark, N. J.

NEW BRUNSWICK, N. J.—United Surgical Supply Co. has been incorporated with 1000 shares of common stock to manufacture surgical instruments, by Alfred S. Marsh, New Brunswick.

BROOKLYN, N. Y.—Perfection Iron Works

has been incorporated with $5000 capital, by M. Schulman, 1799 Pitkin avenue.

NEW YORK—Visible Adding Machine Manufacturers has been incorporated with $931,500 capital, by J. P. Ryan, 16 East Forty-third street.

CANTON, O.—Central Pattern Works Inc. has been incorporated with 250 shares of no par stock to manufacture and deal in patterns of all kinds, by Herbruck, Shetler, Molehier & Roach, Renkert building.

CLEVELAND—Superior Galvanizing Co. has been incorporated with $25,000 capital, by Treadway & Marlatt, attorneys, Union Trust building.

CLEVELAND—National Muffler Co. has been incorporated with 100 shares of no par stock to manufacture automobile mufflers, through Palmer & Hadden, attorneys, 1805 Guarantee Title building

SEMINOLE, OKLA.—Seminole Refining Co. has been incorporated with $50,000 capital to operate an oil refinery, by L. C. Clark and associates.

GREENVILLE, S. C.—American Loom Co. has been incorporated with $50,000 capital to manufacture looms. F. A. Lawton, 620 East McBee avenue, is president and treasurer.

PAMPA, TEX.—Pampa Pipe Line Co. has been incorporated with $100,000 capital to operate oil and gas pipe lines, by Reese S. Allen, First National Bank building.

PORT ARTHUR, TEX.—Gulfport Boiler & Welding Works has been incorporated with $20,000 capital, by B. R. Schultz, 320 Seventh street.

BRIDGEBURG, ONT.—Houdaille Co. of Canada Ltd. has been incorporated to manufacture and deal in accessories and equipment for automobiles, trucks and tractors with $40,000 capital, by Tobias E. Forestel, Edward W. Johnston and Frank T. Pattison, all of Bridgeburg.

TORONTO, ONT.—Seaboard Dredging & Construction Co. Ltd. has been incorporated with $200,000 capital, by Daniel W. Perkins, Vivian W. Bartham and Joseph F. Compton, all of Toronto.

TORONTO, ONT.—W. E. Booth Co. Ltd. has been incorporated to manufacture and deal in engines, machines and tools with 2500 shares of no par stock, by Daniel R. Michener, Arthur H. Robertson and Charles M. Robertson, all of Toronto.

TORONTO, ONT.—Rapid Devices Ltd. has been incorporated to manufacture and deal in automobile devices, radios and radio parts with a capital of $50,000 and 50,000 shares of no par stock, by Reginald A. Tombs, Frederick Hopewell and Allan F. McNaughton, all of Toronto.

TORONTO, ONT.—G. R. Mfg. Co. has been incorporated to manufacture and deal in flatware and articles manufactured from metals with $40,000 capital, by Walter C. Thomson, Angus McMillan and William L. Wallace, all of Toronto.

TORONTO, ONT.—Wheel & Rim Co. of Canada Ltd. has been incorporated to manufacture and deal in wagons, carriages, automobiles, wheels, hubs and rims, with $40,000 capital, by Sydney E. Wedd, Bruce V. McCrimmon and Genieve Ozburn, all of Toronto.

TORONTO, ONT.—Paton Oil Burners Ltd. has been incorporated to manufacture and deal in oil burners and electrical equipment with 100,000 shares of no par stock, by George Paton, Harry J. MacDonald and Cecil A. Louch, all of Toronto.

TORONTO, ONT.—Filtrators (Canada) Ltd. has been incorporated to manufacture and deal in filtrators, engines, boilers, etc., with a capital of $40,000 and 12,000 shares of no par stock, by Norman S. Macdonald, Arthur B. Mortimer and Berence J. Thomson, all of Toronto.

MONTREAL, QUE.—Phoenix Horse Shoe & Mfg. Co. Ltd. has been incorporated to manufacture and deal in iron and steel products with $100,000 capital, by Neopol Charboneau, of Outremont, Que., Joseph A. Marion and Paul Lebel, of Montreal.

MONTREAL, QUE.—T. L. Dunbar Co. Ltd. has been incorporated to manufacture and deal in machinery, engines, boilers and power plant equipment with $50,000 capital, by James A. Mathewson, Kenneth A. Wilson and Arthur I. Smith, all of Montreal.

MONTREAL, QUE.—Canadian Brownhoist Ltd. has been incorporated to manufacture and deal in hoisting and conveying machinery with 20,000 shares of no par stock, by Lawrence McFarlane, Adrian Knatchbull-Hugesson and William F. Macklaier, all of Montreal.

MONTREAL, QUE.—Industrial Manufacturing Company Ltd. has been incorporated to manufacture and deal in agricultural, mining, milling and other industrial machinery with 50,000 shares of no par stock, by Ralph E. Allan, William Taylor and Douglas R. Hornaby, all of Montreal.

MONTREAL, QUE.—Magirus Fire Apparatus Co. of Canada Ltd. has been incorporated to manufacture and deal in fire extinguishing and controlling apparatus with 200 shares of no par stock, by David C. Robertson and Edmund F. Coughlin, of Montreal, and Charles L. Buchanan, of Outremont, Que.

MONTREAL, QUE.—Quickheat Co. of Canada Ltd. has been incorporated to manufacture and deal in electric lamps, dynamos and motor apparatus with a capital of $1,000,000 and 1,500,000 shares of no par stock, by Louis H. Veronneau, Joseph J. Bouchard and Roger Veronneau, all of Montreal.

New Trade Publications

VENTILATORS—Swartwout Co., 18511 Euclid avenue, Cleveland, has issued a folder on its rotary, ball bearing ventilators.

HEATING UNITS—General Electric Co., Schenectady, N. Y., has issued two folders, one on its cartridge-type, electric, heating units and the other on its strip heaters.

ELECTRIC MOTORS—Century Electric Co., St. Louis, describes in a current bulletin its multispeed squirrel cage induction polyphase motor, with full description of its characteristics.

PYROMETERS—Application of a mercury switch to control automatically by means of a pyrometer is described in a bulletin by the Republic Flow Meter Co., Chicago. Diagrams show construction of the pyrometers and of the mercury switch by which control is assured.

SPEED RECORDERS—A bulletin of the Esterline-Angus Co., Indianapolis, is devoted to discussion of its speed recorders for steam turbines as a means of economical operation and proper handling. Graphs from the recorder and views of actual installations are given.

SWITCHES—General Electric Co., Schenectady, N. Y., has issued two folders on switches. One describes enclosed, magnetic switches for alternating current motors and the other three phase, enclosed, magnetic, reversing switches for alternating current.

LATHES—South Bend Lathe Works, South Bend, Ind., has issued two bulletins covering a 9-inch and a junior lathe. Both machines are back-geared screw cutting type, designed for several kinds of drive. Specifications are complete. They are well illustrated to show applications.

SAND—Enterprise Sand Co., Fulton building, Pittsburgh, in a current folder describes the various sands it markets. Screen and chemical analyses are given. The company mines, blends and sells sands used in the manufacture of malleable, gray iron, steel and nonferrous castings.

TRANSMISSIONS—Lewellen Mfg. Co., Columbus, Ind., manufacturer of variable speed transmissions, has issued a catalog of its transmissions and controlling devices. Illustrations make clear the principle on which the transmissions act and present a variety of applications in industrial work.

ELECTROPLATING GENERATORS—A bulletin on its electroplating generators has been issued by the Columbia Electric Mfg. Co., Cleveland. It describes in detail the design and construction of the company's product. Illustrations show the various parts, and their action is explained. Dimension drawings and tables are provided.

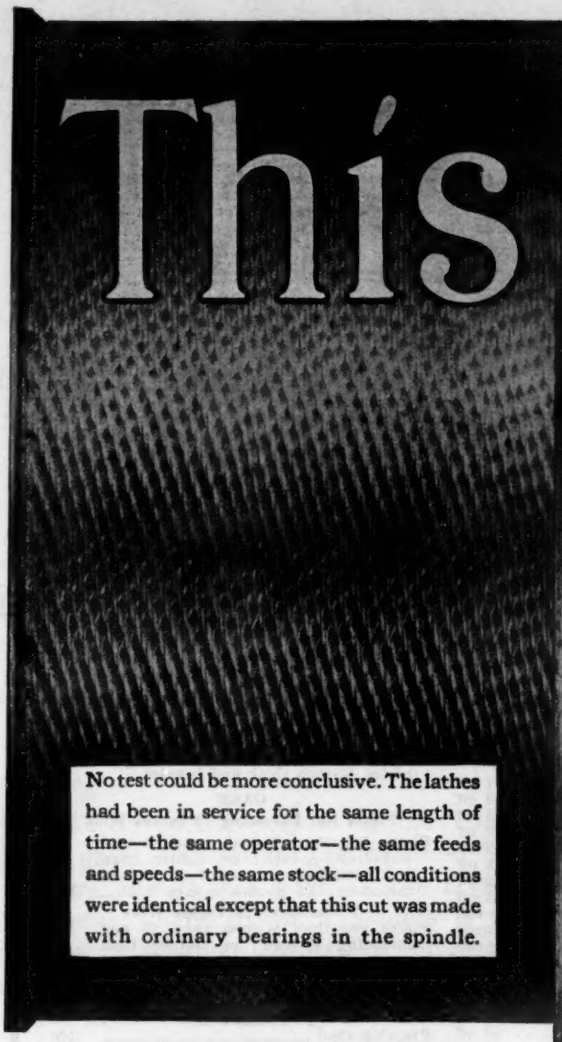
WELDING ROD—Fusion Welding Corp., Chicago, a subsidiary of the Chicago Steel & Wire Co., devotes a current bulletin to a type of its welding rod adapted to welding the air quenching austenitic chrome nickel alloy steels by metallic arc or other welding methods. Properties of the metal are described and technique of its use explained.

BLOWERS—Connersville Blower Co., Connersville, Ind., has issued a bulletin describing two series of its rotary positive blowers. They are featured by the Boston type arrangement, with double outer bearings supporting both shafts, renewable split sleeve, babbitt-lined bearing or with antifriction bearings. Tables of capacity and pressure ratings of blowers in these series are given.

BOILERS—Combustion Engineering Corp., International Combustion building, 200 Madison avenue, New York, describes its pulverized fuel systems, furnaces for pulverized fuel, air preheaters, various type stokers, and several types of boilers in a current catalog. It also contains a list of factors to be taken into consideration when installing steam generating units.

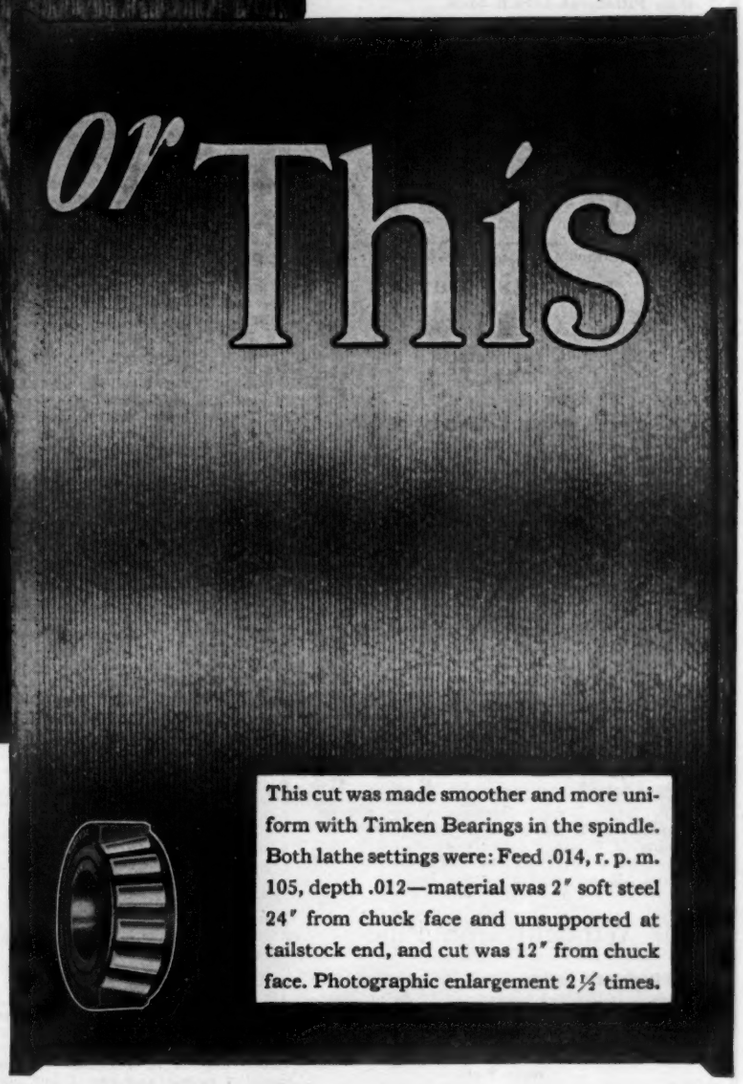
ELECTRIC MOTORS—Louis Allis Co., Milwaukee, has published a bulletin on its explosion proof squirrel cage motors. They are designed for use in the hazardous industries where an explosive atmosphere is an element of danger. The entire subject is gone into thoroughly and results of tests are presented. Illustrations show various typical installations.

This



No test could be more conclusive. The lathes had been in service for the same length of time—the same operator—the same feeds and speeds—the same stock—all conditions were identical except that this cut was made with ordinary bearings in the spindle.

or This



This cut was made smoother and more uniform with Timken Bearings in the spindle. Both lathe settings were: Feed .014, r. p. m. 105, depth .012—material was 2″ soft steel 24″ from chuck face and unsupported at tailstock end, and cut was 12″ from chuck face. Photographic enlargement 2½ times.

The Difference Is Made by Timken-Equipped Spindles

This chatter-proof work shows only the *immediate* results of Timken friction-elimination, Timken full radial-thrust ability and Timken greater load capacity.

It takes operating records to tell the *complete* story of Timken savings in power and lubricant, of continued accuracy and of increased output. Inevitably these follow the use of Timken Bearings at vital points in machines because Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made electric furnace steel make no compromise with wear.

Increased production and lower costs are so much a part of Timken performance that Timken Bearings are coming to the fore as the most widely used anti-friction bearings wherever wheels and shafts turn. New alloys for cutting—greater speeds—more severe thrust, shock and strain emphasize the wisdom of early replacements with Timken-equipped to assure Timken economies.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	45½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	58	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and supplementary discounts of 5 and 2½ per cent on black, and 1½ points and supplementary discounts of 5 and 2½ per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{32}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c